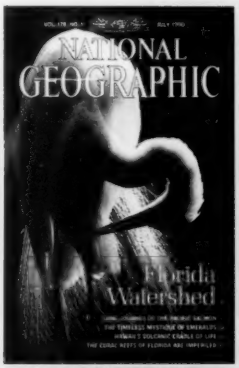
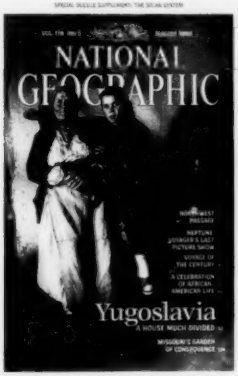
VOLUME 178

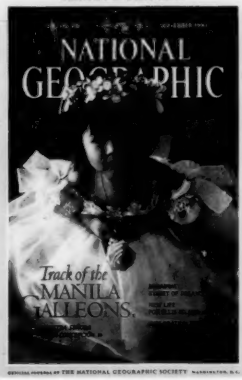
NATIONAL GEOGRAPHIC

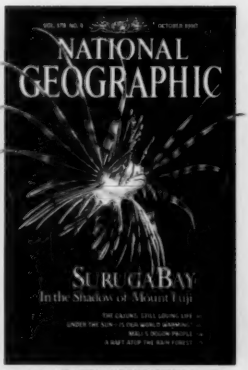
INDEX

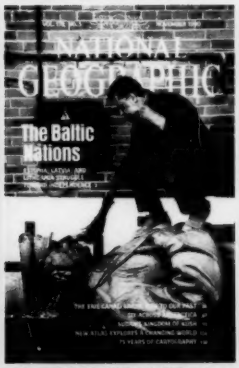
JULY-DECEMBER 1990

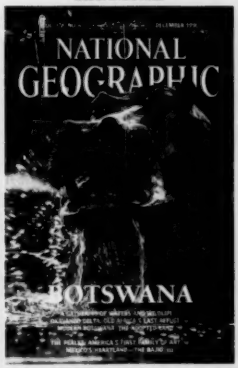












PUBLISHED BY THE NATIONAL GEOGRAPHIC SOCIETY WASHINGTON, D.C.

NATIONAL GEOGRAPHIC SOCIETY

"For the increase and diffusion of geographic knowledge"

THE NATIONAL GEOGRAPHIC SOCIETY is chartered in Washington, D. C., as a nonprofit scientific and educational organization. Since 1890 the Society has supported more than 4,000 explorations and research projects, adding to knowledge of earth, sea, and sky.

GILBERT M. GROSVENOR, *President*
OWEN R. ANDERSON, *Executive Vice President*

Senior Vice Presidents:
ALFRED J. HAYRE, *Treasurer*
RAYMOND T. McELLIGOTT, JR.
ROBERT B. SIMS

Vice Presidents:
MICHELA A. ENGLISH, FREDERICK C. GALE, JOSEPH B. HOGAN, JAMES P. KELLY, ADRIAN L. LOFTIN, JR., LEWIS P. LOWE, ROSS L. MULFORD, H. GREGORY PLATTS, PAUL B. TYLOR

EDWIN W. SNIDER, *Secretary*
SUZANNE DUPRÉ, *Corporate Counsel*

BOARD OF TRUSTEES

GILBERT M. GROSVENOR, *Chairman*
OWEN R. ANDERSON, *Vice Chairman*
LLOYD H. ELLIOTT, *Vice Chairman*

Chairman Emeritus:
MELVIN M. PAYNE
JOE L. ALLBRITTON
Chairman, Riggs National Bank
THOMAS E. BOLGER
Chairman, Executive Committee, Bell Atlantic
FRANK BORMAN
Chairman and CEO, Patlex Corporation
LEWIS M. BRANSCOMB
Kennedy School of Government, Harvard University
ROBERT L. BREEDEN
J. CARTER BROWN
Director, National Gallery of Art
WARREN E. BURGER
Chief Justice of the United States (Ret.)
MARTHA E. CHURCH
President, Hood College
MICHAEL COLLINS
President, Michael Collins Associates
GEORGE M. ELSEY
President Emeritus, American Red Cross
WILLIAM GRAVES
ALFRED J. HAYRE
A. LEON HIGGINBOTHAM, JR., Chief Judge for the Third Circuit, U. S. Court of Appeals
JOHN JAY ISELIN
President, The Cooper Union
TIMOTHY T. KELLY
J. WILLARD MARRIOTT, JR.
Chairman and President, Marriott Corporation
FLORETTA DUKES McKENZIE
Former Superintendent of Schools, District of Columbia
PATRICK F. NOONAN
President, The Conservation Fund
NATHANIEL P. REED
Businessman-Environmentalist
B. FRANCIS SAUL II
Chairman and CEO, B. F. Saul Company
ROBERT C. SEAMANS, JR.
Department of Aeronautics and Astronautics, MIT

TRUSTEES EMERITUS

CRAWFORD H. GREENEWALT, CARYL P. HASKINS, MRS. LYNDON B. JOHNSON, WM. McCHESNEY MARTIN, JR., LAURANCE S. ROCKEFELLER, FREDERICK G. VOSBURGH, JAMES H. WAKELIN, JR., JAMES E. WEBB, CONRAD L. WIRTH

RESEARCH AND EXPLORATION COMMITTEE

BARRY C. BISHOP, *Chairman;* FRANK C. WHITMORE, JR., *Vice Chairman;* ANTHONY R. DE SOUZA, *Editor, National Geographic Research;* EDWIN W. SNIDER, *Secretary;* STEVEN S. STETTES, *Asst. Sec.;* H. J. DE BLIJ, University of Miami, WILLIAM GRAVES, GILBERT M. GROSVENOR, BETTY J. MEGGERS, Smithsonian Institution, MELVIN M. PAYNE, PETER H. RAVEN, Missouri Botanical Garden, CHARLES H. SNYDER, University of Colorado, JOHN H. STEELE, Woods Hole Oceanographic Institution, GEORGE E. STUART, JAMES H. WAKELIN, JR., GEORGE E. WATSON, RICHARD S. WILLIAMS, JR., U. S. Geological Survey, HENRY T. WRIGHT, University of Michigan

EDUCATION FOUNDATION

LLOYD H. ELLIOTT, *President;* DANFORTH P. FALES, *Vice President;* Betsy Ellison

NATIONAL GEOGRAPHIC MAGAZINE

GILBERT M. GROSVENOR, *President and Chairman*
WILLIAM GRAVES, *Editor*

SENIOR ASSISTANT EDITORS

WILLIAM L. ALLEN, *Pictorial* • THOMAS Y. CANBY, *Science* • JOHN B. GARVER, JR., *Cartography* NOEL GROVE, *Environment* • ROBERT W. HERNANDEZ, *Foreign Editions* • DAVID JEFFERY, *Legends* THOMAS R. KENNEDY, *Photography* • ROBERT W. MADDEN, *Layout* • SAMUEL W. MATTHEWS, *Production* O. LOUIS MAZZATENTA, *Control Center* • ELIZABETH A. MOIZE, *Staff* • HOWARD E. PAINE, *Art* ROBERT M. POOLE, *Contract Writers* • JOHN J. PUTMAN, *Manuscripts* • LESLEY B. ROGERS, *Research* W. ALLAN ROYCE, *Illustrations* • MARY G. SMITH, *Research Grant Projects* GEORGE E. STUART, *Archaeology* • PRIIT J. VESILIND, *Expeditions*

EDITORIAL

ASSISTANT EDITORS: Robert Booth, William S. Ellis, Rowe Findley, Rick Gore, Alice J. Hall, Peter Miller, Merle Severy, Peter T. White. **SENIOR WRITERS:** Thomas J. Abercrombie, Harvey Arden, Mike Edwards, John L. Eliot, Bryan Hodgson, Michael E. Long. **SENIOR EDITORIAL STAFF:** Judith Brown, Charles E. Cobb, Jr., Boyd Gibbons, Larry Kohl, Douglas B. Lee, Cathy Newman, Cliff Tarpy, Jane Vessels. *Geographica:* Boris Weintraub. *Production:* John L. McIntosh. **EDITORIAL STAFF:** Don Belt, Michael Kenna, Peter L. Porteous, Margaret N. Walsh, A. R. Williams. **RESEARCH:** Michaeline A. Sweeney, *Assoc. Director; Researcher-Editors:* Carolyn H. Anderson, Ann B. Henry, Jeanne E. Peters. *Researchers:* Danielle M. Beauchamp, Judith F. Bell, Catherine C. Fox, Sheila M. Green, Jan Holderness, Anne A. Jamison, Amy E. Kezerian, Kathy B. Maher, Elizabeth R. Manierre, Barbara W. McConnell, Holly Reckord, Abigail A. Tipton. *Legends:* Victoria C. Ducheneaux, Margaret G. Zackowitz. *Planning Council:* Mary McPeak

ILLUSTRATIONS

PHOTOGRAPHERS: Kent J. Kobersteen, *Asst. Director;* Joseph H. Bailey, James P. Blair, Victor R. Boswell, Jr., Jodi Cobb, Bruce Dale, Emory Kristof, Joseph D. Lavenburg, George F. Mobley, James L. Stanfield; *Admin.:* Susan A. Smith, Claude E. Petrone, Maria Stenzel, George Von Kantor. **ILLUSTRATIONS EDITORS:** William T. Douthitt, *Asst. Director;* David L. Arnold, John A. Echave, Bruce A. McElfresh, Charlene Murphy, Robert S. Patton, Elie S. Rogers, Jon Schneeberger, Susan Welchman. **LAYOUT:** Constance H. Phelps, *Asst. Dir.;* Mary Kathryn Glassner, David Griffin; *Typography:* Betty Clayman-DeAtley, Douglas M. McKenney. **ART:** William H. Bond, *Artist;* Karen E. Gibbs, *Research.* **ENGRAVING AND PRINTING:** William W. Smith, *Director;* James R. Whitney, *Assoc. Dir.;* Judy L. Garvey, Janet C. Novak, Ronald E. Williamson

CARTOGRAPHY

Assoc. Directors: Allen Carroll, Alice T. M. Rechlin, John F. Shupe, Leo B. Zebarth; *Asst. Dirs.:* David P. Beddoe, John F. Dorr, Harold A. Hanson, Harry D. Kauhane, Richard K. Rogers, Elie Sabban. *Geographer:* Ted Dachtera. *Map Editors:* Charles W. Gotthardt, Jr., *Supvr.;* John T. Blozis, Thomas L. Gray, Etelka K. Horvath, Gus Platis, Jon A. Sayre, Thomas A. Wall, Thomas A. Walsh. *Designers:* John A. Bonner, Nancy Schweickart, Sally S. Summerall. *Researchers:* John L. Beeson, Dierdre T. Bevington-Attardi, Ross M. Emerson, Marguerite B. Hunsiker, Linda R. Kriete, Gaither G. Kyhos, Mary C. Latham, David B. Miller, Dorothy A. Nicholson, Douglas A. Strobel, Juan J. Valdés, Andrew J. Wahll, Susan Young. *Text:* Oliver G.A.M. Payne. *Map Artists:* Roland R. Nichols, *Supvr.;* Iskandar Baday, Edward J. Holland, James E. McClelland, Jr., Stephen P. Wells, Alfred L. Zebarth. *Computer Cartography:* Charles F. Case, Kevin P. Allen, Richard W. Bullington, Arthur J. Cox, Martin J. Golden, Jonathan E. Kaut. *Specialists:* Charles L. Miller, Henri A. Delanghe

EDITORIAL SERVICES

ADMINISTRATION: M. Jean Vile, Benita M. Swash, *Assts. to the Editor;* Elaine Rice Ames, Marie L. Barnes, Barbara D. Case, Sandra M. Dane, Lilian Davidson, Marisa Domeyko, Carol L. Dumont, Neva L. Folk, Eleanor W. Hahne, Ellen E. Kohlberg, Liisa Maurer, Katherine P. McGown, Charlene S. Valeri, Ruth Winston. *Picture Requests:* Barbara A. Shattuck. *Travel:* Virginia A. Bachant, Ann C. Judge. **RESOURCES:** *Library:* Susan Fifer Canby, *Director;* David C. Beveridge, Arlene T. Drewes, Carolyn Locke, Marta Strada. *Illustrations:* Maura A. Mulvihill, *Director;* L. Fern Dame, Carolyn J. Harrison. *Records:* Mary Anne McMillen, *Director;* Ann E. Hubbs, Mennen M. Smith. *Correspondence:* Joseph M. Blanton, Jr., *Director. Indexes:* Jolene M. Blozis, Anne K. McCain. *Translations:* Kathryn A. Bazo. **COMMUNICATIONS:** Steve Raymer, *Director, News Service;* Kenneth C. Danforth, *Assoc. Dir.;* Joy Aschenbach, Mercer Cross, Donald J. Frederick, Kathy Moran, Donald Smith, Robert C. Radcliffe, *Radio.* Dale A. Petroskey, *Asst. Vice Pres., Public Affairs;* Mary Jeanne Jacobsen, Barbara S. Moffet, Susan S. Norton. **AUDIOVISUAL:** Joanne M. Hess, *Director;* Jon H. Larimore, *Tech. Dir.;* Ronald S. Altemus, Scott A. Brader, Robert G. Fleegal, Paul Gorski, P. Andrew van Duym, Gerald L. Wiley

ADMINISTRATION

ASST. VICE PRESIDENTS: Joyce W. Graves, *Asst. to the President;* Carolyn F. Clewell, Robert G. Corey, Joseph S. Fowler, Donna L. Hasslinger, Thomas E. Kulikosky, Carol E. Lang, George E. Newstedt, Jimmie D. Pridemore, James G. Schmeltzer, Carl M. Shrader, Peter F. Woods. **ASST. TREASURER:** Dorothy M. Wagner. **ASSTS. TO THE PRESIDENT:** Richard E. Pearson, *Diplomatic and Civic Affairs;* Karen L. Harshbarger, Karen S. Marsh. **GEOGRAPHY EDUCATION PROGRAM:** Robert E. Dulli, *Director;* J. Joe Ferguson. **ACCOUNTING:** Laura L. Leight, Larry E. Dowdy. **ADMINISTRATION:** Mary L. Blanton, Margaret R. Herndon, Robert V. Koenig, Marta M. Marschalko, Myra A. McLellan, Jennifer Moseley, Joyce S. Sanford, Myla Stewart, Frank M. Twigger, Janet C. Yates. **COMPUTER:** Scott Bolden, Warren Burger, William L. Chewning, Fred R. Hart, George F. Hubbs, Ronald C. Kline, Richard A. Mechler. **EDUCATIONAL SERVICES:** Wendy G. Rogers, Dean R. Gage, Carl W. Harmon, Jr. **EXPLORERS HALL:** Nancy W. Beers, Richard McWalters. **HUMAN RESOURCES:** Robert E. Howell, Glenn G. Pepperman, Shirley N. Wilson. **MEMBERSHIP SERVICES:** Margaret L. Bassford, Carol A. Houck, Kathleen V. Howard, Marguerite M. Wise. **PROMOTION:** Joan Anderson, James V. Bullard, James R. Dimond, Jr., Robert L. Feige, Deborah A. Jones, Charles T. Kneeland, Lucy J. Lowenthal, F. William Rath. **PURCHASING:** Thomas L. Fletcher, Edmund E. Lapane

PRODUCTION SERVICES

QUALITY: Frank S. Oliverio, Bill M. Aldridge. **PRE-PRESS:** Geoffrey T. McConnell, Billy R. Barnett, Richard A. Bredeck, David H. Chisman, Phillip E. Plude, Bernard G. Quarrick. **PHOTOGRAPHIC LAB:** William S. Petrini, James H. Trott, Alfred M. Yee. **PRINTING:** Hans H. Wegner, Joseph M. Anderson, Sherrie S. Harrison. **ADMINISTRATION:** Lawrence F. Ludwig, *Director;* Joan S. Simms

ADVERTISING

Joan McCraw, *National Director.* Debra J. Grady, *New York Manager;* O. W. Jones, Jr., *Detroit Manager;* James D. Shepherd, *Western Manager;* Philip G. Reynolds, *Special Accounts Manager.* Laurie L. Kutsche, *Chicago Manager;* Michel A. Boutin, *International Director,* 90, Champs-Élysées, 75008 Paris. Bernadette Lorda, *International Manager, New York. Washington:* Alex MacRae, *Marketing/Sales Dev.* Pandora Browne, *Promotion.* Sarita L. Moffat, *Operations.* Renee S. Clepper, *Research.* Gail M. Jackson, *Production*

TELEVISION

Timothy T. Kelly, *Vice President and Director;* Tom Simon, *Co-Executive Producer;* Julia Mair, *Programming;* Susan Hoover, *Business Operations;* Todd Berman, *Marketing;* Kathleen F. Teter, *Public Relations;* Patricia Gang, *Film Library;* Georgos N. Lampathakis, Marjorie M. Moomey, Nola L. Shrewsberry

EDUCATIONAL SERVICES OF THE SOCIETY

ROBERT L. BREEDEN, *Senior Vice President*

William R. Gray, *Asst. Vice Pres.;* David P. Johnson, *Exec. Asst.;* Stephen J. Hubbard, Carolyn W. Jones. **BOOK SERVICE:** Charles O. Hyman, *Director and Sr. Asst. Editor;* Ross Bennett, *Assoc. Dir.;* David M. Seager, *Art Dir.;* Greta Arnold, Paulette L. Claus, Mary Dickinson, John T. Dunn, Susan C. Eckert, Karen F. Edwards, Charlotte Golin, J. Edward Lanouette, Linda B. Meyerriecks, Elizabeth Newhouse, Melanie Patt-Corner, Margaret Sedeen, Jean K. Teichroew, Penelope Timbers, Jonathan Tourtellot, Richard Wain. **SPECIAL PUBLICATIONS:** Donald J. Crump, *Director and Sr. Asst. Editor;* Bonnie S. Lawrence, *Asst. Dir.;* Jody Bolt, *Art Dir.;* John G. Agnone, Jane H. Buxton, Margery G. Dunn, Mary Lee Elden, Toni Eugene, David V. Evans, Ron Fisher, Patricia F. Frakes, Rosamund Garner, Mary Ann Harrell, Charles E. Herron, Alice Jablonsky, Jane R. McCauley, Tom Melham, Robert Messer, H. Robert Morrison, Thomas O'Neill, Barbara A. Payne, Thomas B. Powell III, Cynthia Ramsay, Cinda Rose, David V. Showers, Viviane Y. Silverman, Gene S. Stuart, Jennifer C. Urquhart, George V. White. **WORLD:** Pat Robbins, *Editor;* Margaret McKelway, *Assoc. Editor;* Ursula Vosseler, *Art Dir.;* Jacqueline Geschickter, Pat Holland, Veronica Morrison, Judith Rinard, Eleanor Shannahan. **EDUCATIONAL MEDIA:** George A. Peterson, *Asst. Vice Pres.;* Jimmie Abercrombie, Julie V. Agnone, David Beacom, Monica P. Bradsher, James B. Caffrey, Betty G. Kotcher, Sandra L. Matthews, Louise C. Millikan. **TRAVELER:** Douglas E. Hill, *Publisher;* Richard Busch, *Editorial Dir.;* Paul Martin, *Editor;* Suez B. Kehl, *Art Dir.* **PUBLICATIONS ART:** John D. Garst, Jr., *Director;* Virginia L. Baza, *Assoc. Dir.;* Isaac Ortiz, *Asst. Dir.;* Peter J. Balch. **EDUCATIONAL FILMS:** Sidney Platt, *Director;* Donald M. Cooper, *Assoc. Dir.;* Suzanne K. Poole, Carl E. Ziebe

COPYRIGHT © 1991 National Geographic Society. All rights reserved. NATIONAL GEOGRAPHIC and Yellow Border: Registered Trademarks ® Marcas Registradas.

INDEX

Titles and illustrations in boldface

A

A P de México, Querétaro, Mexico: Muffler manufacture **137** *Dec*
'a'ā lava 74, **74, 83** *Jul*
Abbeville, La.: Alligator farm 61 *Oct*
Aberlenc, Henri-Pierre 138, **138** *Oct*
Abreo, Jennifer. President's Page. *Dec*
Abu Simbel (site), Egypt: Temple reliefs 111, **123** *Nov*
Acadiana (region), La.: Flag 57 *Oct;* Geography 44 *Oct;* Map 45 *Oct;* Oil bust (1980s) 64 *Oct*
Acadians: ***The Cajuns: Still Loving Life.*** By Griffin Smith, Jr. 40-65, *Oct*
Acadie (region), Canada: Settlement 44, 45, 50 *Oct*
Acapulco, Mexico: Fort **28-29** *Sep;* Manila galleon trade 28, 32, 35-36, fair **30,** 35, 36 *Sep*
Accordion, diatonic 57 *Oct*
Achord, Steve **32** *Jul*
Acid rain: ***Students in Zambia Look for Acid Rain.*** By Gilbert M. Grosvenor. President's Page. *Sep*
Acquired Immune Deficiency Syndrome *see* AIDS
Adams, Brock 134 *Sep*
Adams, Christy 95 *Sep*
Adams, John: Comment on Peale painting 104-105 *Dec;* Description of Charles Willson Peale 101 *Dec*
Adams Basin, N. Y.: Inn **52-53** *Nov*
Adaptive radiation: Hawaii 78, 85 *Jul*
Aechmea mertinsii **134-135** *Oct*
Afghanistan: Emerald mining 54, 55, 57 *Jul*
Africa: *Africa; Africa Threatened* map supplement. *Dec; see also* Botswana; Egypt; Mali; Sudan; Zambia; Zimbabwe
Africamericas Festival, Philadelphia, Pa. **71** *Aug*
African Americans: ***Philadelphia's African Americans: A Celebration of Life.*** Photos by Roland L. Freeman. 66-91, *Aug*
African elephants **2-4, 18-19** *Dec; Africa Threatened* map supplement. *Dec;* ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec;* ***Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov*
African fish eagle **14-15** *Dec*
African wild dogs 43, 53 *Dec; Africa Threatened* map supplement. *Dec*
African wildlife: *Africa Threatened* map supplement. *Dec;* ***A Gathering of Waters and Wildlife.*** By Frans Lanting. 5-37, *Dec;* ***Okavango: Africa's Wild Treasure.*** By William Graves. Editor's Page. *Dec;* ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec*
After a Century, the Name's Still the Game. Geographica. *Oct*
After Nazi Prison a "Full, Unselfish Life." Geographica. *Dec*
Aglukkaq, Alice **32** *Aug*
Agriculture: ***Buried "Marshmallows" Save Irrigation Water.*** Earth Almanac. *Aug;* ***South Florida Water: Paying the Price.*** By Nicole Duplaix. 89-113, *Jul*
AIDS: New York, N. Y. 80, 85-86 *Sep*
Ainu: Salmon fishing 12, 21, **21,** 22, 25, ceremony **22** *Jul;* Salmon-skin robe **20** *Jul*
"Aioli Dinner" (Rodrigue) **44** *Oct*
Air pollution: Grand Canyon. Earth Almanac. *Jul;* ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct; see also* Acid rain
Aircraft *see* Hot-air dirigible; *and Columbine II*
Alaska: ***The Blast Not Heard Around the World.*** Earth Almanac. *Dec;* Salmon industry 9, 24, 27, 28, fishermen **8-9,** 24 *Jul; see also* Northwest Passage; Tongass National Forest
Alaska Summer Geography Institute. President's Page. *Dec*
Alaskan pipeline **13** *Aug;* ***Pipeline Is Corroded, Alaska Oil Still Flows.*** Geographica. *Aug*
Albanians: Kosovo Province, Yugoslavia 92, 100, 104, 105 *Aug*
Alexander I, King (Yugoslavia) 108 *Aug*
Algae: Algal blooms 99, 100 *Jul;* Coral reef destruction 120, 125, **130,** 131 *Jul;* Periphytic algae 105 *Jul*
Alhóndiga de Granaditas, Guanajuato, Mexico: Decapitation display 129 *Dec*
Alien registration cards 103 *Sep*
Aliens, illegal: United States 104-105 *Sep*
Allard, William Albert, photographer: ***The Cajuns: Still Loving Life.*** 40-65, *Oct*
Allen, Betty 85 *Sep*
Allen, Julie 113-114 *Sep*
Allen, Laurie **43** *Nov*
Allende, Ignacio 136 *Dec*
Alligators: Meat locker **60-61** *Oct;* Skin storage **61** *Oct;* Tracks **113** *Jul*
Altamont Pass, Calif.: Wind turbines 81, **92-93** *Oct*
Altar, voodoo **74-75** *Aug*
Amani-natake-lebte, King (Kush): Pectoral from tomb **115-117** *Nov*
Amazon basin, South America: Rain forest 126, 130-131 *Aug*
American beech: Leaves **87** *Oct;* Range map 87 *Oct*
American Forestry Association: ***Still Champ After Half a Century.*** Earth Almanac. *Dec*
American Indian Community House Gallery, New York, N. Y. 69 *Sep*
Amieva, Victor M. 132 *Dec*
Amma (Dogon deity): Ritual sacrifice **116-117** *Oct*
Amos, William H., author-photographer: ***Hawaii's Volcanic Cradle of Life.*** 70-87, *Jul*
Amun (Egyptian god) 97 *Nov;* Emblem **98** *Nov;* Kushite beliefs 122-123, 124 *Nov;* Name translation 124 *Nov;* Reliefs **122, 123** *Nov*
Amun temple, Napata (site), Sudan **96-97** *Nov;* Aerial view **106** *Nov;* Courtyard **108,** computer models **108, 109** *Nov;* Excavations 98, 103, 105 *Nov;* Relief **122** *Nov*
Amundsen, Roald: Northwest Passage transit 13, 14 *Aug;* South Pole expedition 84 *Nov*
Amundsen-Scott Station, Antarctica 88, 94 *Nov*
Ancelet, Barry Jean 46-47, **47** *Oct*
Andean condors: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct*
Anderson, Brad **31** *Jul*
Anderson, Kenneth 106 *Aug*
Andrus, Dwight 64 *Oct*
Angel Falls, Venezuela: ***A Photographic Gift of a Venezuelan Trek.*** Geographica. *Sep*
Angers, Trent 57 *Oct*
Anhinga **15** *Dec*
Animal sacrifice: Dogon **116-117** *Oct*
Animism: Dogon 108-109 *Oct*
Annapolis, Md.: Paca home **103** *Dec*
Annapolis Basin, Nova Scotia, Canada: Acadian settlement 50 *Oct*
Anson, George: Naval strike led by 23, 24-25, 28 *Sep*
Antarctic Peninsula, Antarctica: Campsite **73-74** *Nov*
Antarctica: ***Antarctica: the New Challenge.*** By William Graves. Editor's Page. *Nov;* Auroral band **96** *Oct;* Ozone layer hole 90, 91, 94-95, images from space **90,** observations 94 *Oct;* ***Six Across Antarctica: Into the Teeth of the Ice.*** By Will Steger. 67-95, *Nov*
Antelope: Botswana 28, 43, 58, **60,** 61, **62,** 63 *Dec; see also* Impalas
Anthiases **23** *Oct*
Anthropology, physical: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Apaseo el Alto, Mexico: Worshipers **141** *Dec*
Aquaculture: ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul*
Archaeology: ***Heyerdahl Still Busy, on Land This Time.*** Geographica. *Sep;* ***It's a "Lousy" Job, but Science Has to Do It.*** Geographica. *Aug;* ***Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov;* ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep;* ***Some Tasty Recipes for a Babylonian Feast.*** Geographica. *Dec; see also* Maya

Archaeology, underwater: ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug;* **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep*
Archibald, George: ***Fighting to Help Cranes in the Mekong Delta.*** Geographica. *Dec*
Arctic regions: ***Changing Images of the Northwest Passage.*** By John Bockstoce. 2-33, *Aug;* ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep;* Ozone layer hole 95 *Oct*
Arctic Slope Regional Corporation 33 *Aug*
Arctic Waters Pollution Prevention Act (1970) 23 *Aug*
Arellano, Demetrio and Pedro **142-143** *Dec*
Argentina: ***Greening of an Argentine City, a Century Old.*** Earth Almanac. *Aug*
Arkell, Anthony J. 107 *Nov*
Armendariz Pereira, Beatriz **133** *Oct*
Arnold, James: ***Ash from a Volcano: It May Remain Aloft.*** Geographica. *Nov*
Art, American: ***The Peales: America's First Family of Art.*** By Otto Friedrich. 98-121, *Dec*
Art theft: ***Theft at Herculaneum: 280 Artifacts Stolen.*** Geographica. *Jul*
Arthur R. Marshall Loxahatchee National Wildlife Refuge, Fla.: Agricultural pollutants 104, 105 *Jul*
"The Artist in His Museum" (Peale) **98-99,** 116 *Dec*
Artists: ***The Peales: America's First Family of Art.*** By Otto Friedrich. 98-121, *Dec*
Arundel, Marjorie: ***She Crusades to Save the Wildflowers of Spring.*** Earth Almanac. *Jul*
Arvizu, Carlos 136 *Dec*
Asfaw, Berhane: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Ash from a Volcano: It May Remain Aloft. Geographica. *Nov*
Asia: Emigrants 103, 104 *Sep; see also* China; Japan; Philippines
Aspelta, King (Kush): Cylinder from tomb **117** *Nov*
Asteroids: ***Celestial Rock Group Has a Place in the Sky.*** Geographica. *Nov*
Astor Place Hairstylists, New York, N. Y.: Boys' fashion haircuts **69** *Sep*
Astronomy: ***Celestial Rock Group Has a Place in the Sky.*** Geographica. *Nov;* ***Epilogue to a Space Odyssey.*** By William Graves. Editor's Page. *Aug;* ***Neptune: Voyager's Last Picture Show.*** By Rick Gore. 35-47, *Aug;* ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec; The Solar System, Our Sun's Family; Portraits of Our Celestial Family* supplement. *Aug;* ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Atchafalaya Basin, La. **64-65** *Oct;* Silting 60 *Oct*
Atlantic salmon 13 *Jul*
Atlantic Sugar Association refinery, Belle Glade, Fla. **102-103** *Jul*
Atlas, NGS: ***New Atlas Explores a Changing World.*** By Gilbert M. Grosvenor. 126-129, *Nov*
Atmosphere: ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct*
Atocha (galleon): Salvaged gold-and-emerald cross 38 *Jul*
Atotonilco, Mexico: Fiesta **134-135** *Dec*
Auklets, least: ***In Least Auklet Society, Color Matters Most.*** Geographica. *Nov*
Aurora australis: Satellite images **96** *Oct*
Aurora borealis **97** *Oct;* Cause 88 *Oct;* Satellite images **96** *Oct*
Australia: Drift net ban 20 *Jul;* Emeralds 48, 54, 55 *Jul;* ***In an Empty Region, a Series of Surprises.*** Geographica. *Aug*
Automobiles: ***Is This an Auto Shop Or a Dentist's Office?*** Earth Almanac. *Nov;* Solar-powered **93** *Oct*
Azel, José, photographer: ***Below the Cliff of Tombs: Mali's Dogon.*** 100-127, *Oct;* On Assignment. *Oct*

B

Babylonia: ***Some Tasty Recipes for a Babylonian Feast.*** Geographica. *Dec*
Badlands, N. Dak.: ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug*
Baffin Island, Northwest Territories, Canada: Narwhal hunters **2-3** *Aug*
bago di (Dogon sacrifice) **116-117** *Oct*
Baikal, Lake *see* Baykal, Lake
Bajío (region), Mexico *see* El Bajío
Baker, C. Scott: ***Whale Migrations: Mother (Nature) Calls.*** Geographica. *Dec*
Bakgatla tribe 85 *Dec*
Bald eagle: Feeding on salmon **37** *Jul*
Balekile, Philemon 90-91 *Dec*
Ballard, Robert D.: ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug*
Balloon *see* Hot-air dirigible
Balloons, plastic: Implication in wildlife deaths. Earth Almanac. *Jul*
Ballou, Bill 51-53 *Nov*
Baltic States: ***The Baltic Nations.*** By Priit J. Vesilind. 2-37, *Nov;* ***Fans of the Geographic in an Estonian School.*** Geographica. *Sep;* ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul*
A Ban on Imports of Sipán's Treasures. Geographica. *Nov*
Bandiagara escarpment, Mali: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct*
Bangwato tribe: Chief 49 *Dec;* Chiefs' burial ground 91 *Dec*
Bannerman's turacos. *Africa Threatened* map supplement. *Dec*
Baobab trees: Makgadikgadi Pans, Botswana 69 *Dec*
Baptismal pool: Philadelphia church **80-81** *Aug*
Barbary macaques. *Africa Threatened* map supplement. *Dec*
Barbecue stand, streetside: Philadelphia **88-89** *Aug*
Barges: Bristol Bay, Alas. **28-29** *Jul;* Erie Canal **64-65** *Nov;* Mississippi River **84-85** *Oct*
Barkal, Jebel (site), Sudan: ***Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov*
Barnes Sound, Fla.: Freshwater discharge 128 *Jul*
Barrington Hills, Ill.: ***Prairie Transplant: A Miraculous Move.*** Earth Almanac. *Dec*
Barringtonia butonica **128** *Aug*
Barron, Eric J. 81, 82 *Oct*
Baseball: Origins 51 *Nov;* Players **50, 51** *Nov;* Popularity along Erie Canal 50, 51 *Nov*
Basile, La.: Dance hall **50** *Oct*
Baskets: Mbukushu tribe **48,** fishing baskets **48-49** *Dec*
Batko-Yovino, Susannah: ***Distant Peak Challenges Geography Bee Winner.*** President's Page. *Sep*
Batswana 49, 78 *Dec*
Bayei tribe: Botswana 41 *Dec*
Baykal, Lake, U.S.S.R.: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Bayou Lafourche, La.: Shrimpers 58, 60 *Oct*
Beads, emerald **55** *Jul*
Bears, polar: Tranquilized for census **20-21** *Aug*
The Beatles: ***Celestial Rock Group Has a Place in the Sky.*** Geographica. *Nov*
Beattie, Owen: ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep*
Beaufort Sea: ***Changing Images of the Northwest Passage.*** By John Bockstoce. 2-33, *Aug*
Beaux, Nathalie 108 *Nov*
Bechuanaland Protectorate 76, 78, 82, 83 *Dec;* Administrative capital 76-77 *Dec; see also* present name, Botswana
Bedaux, Rogier 115 *Oct*
Beechey Island, Northwest Territories, Canada: ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep*
Beer, millet 103, 112, 113 *Oct*
Bees, yellow-faced **82,** 85, **85** *Jul*
Beetle, horned **138** *Oct*
Belfield (Peale estate), Philadelphia, Pa. 114 *Dec*
Belgrade, Yugoslavia 110, 112 *Aug;* Park **111** *Aug*
Belize: ***Oldest Known Maya: Not Quite So Old.*** Geographica. *Nov;* ***Pilots Help Preserve Belize Wilderness.*** Earth Almanac. *Oct;* ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Bell, Marty 87 *Sep*
Bella Coola (tribe): Littering taboo 33 *Jul*
Belle Glade, Fla. 96 *Jul;* Agricultural research station 104, soil-loss marker 98, **105** *Jul;* Sugar refinery **102-103** *Jul*
Bellot Strait, Northwest Territories, Canada 9, 33 *Aug*
Below the Cliff of Tombs: Mali's Dogon. By David Roberts. 100-127, *Oct*
Belts: Gold-and-diamond ornament **5** *Sep;* Jewel-encrusted **66-67** *Jul*
Belvedere (yacht): ***Changing Images of the Northwest Passage.*** By John Bockstoce. 2-33, *Aug*
Berard, Dailey J. **57** *Oct*
Berber, Mersad **117** *Aug*

Beriberi: Symptoms 34 *Sep*
Bering land bridge: Paleolithic migrations 14, 16 *Jul*
Bernstein, Sylvia 95 *Sep*
Berry, Chuck: Performance at Voyager spacecraft celebration 47 *Aug*
Beryls: Composition 44, 49 *Jul;* Varieties 48 *Jul*
Bes (Egyptian god): Images 123, **125** *Nov*
Bestelink, P. J. and Barney 61 *Dec*
Bezoar stones 14 *Sep*
Big Bend National Park, Tex.: ***Can El Lobo Make a Comeback?*** Earth Almanac. *Sep*
Biographies *see* Peale, Charles Willson
Birds: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct;* ***Fighting to Help Cranes in the Mekong Delta.*** Geographica. *Dec;* ***In Least Auklet Society, Color Matters Most.*** Geographica. *Nov;* ***Migratory Songbird Decline 1978-1987.*** Earth Almanac. *Oct;* ***Osprey Populations Soar to Old Heights.*** Geographica. *Aug;* ***Whatzat? An Odd Bird With a Cow's Stomach.*** Geographica. *Jul; see also* Bannerman's turacos; Eagles; Egrets; Kirtland's warblers; Owls
Birds Eye plant, Celaya, Mexico: Broccoli processing 137-138, sorting **137** *Dec*
Biscayne aquifer 100 *Jul*
Black, Phyllis 65 *Sep*
Black Americans: ***Philadelphia's African Americans: A Celebration of Life.*** Photos by Roland L. Freeman. 66-91, *Aug*
Black band disease **130** *Jul*
Black coral: ***Dreams and nightmares in Suruga's wire coral forest.*** By David Doubilet. 20-39, *Oct*
Black egrets **12-13** *Dec*
Black Greek Picnic, Philadelphia, Pa.: Fraternity brothers **90-91** *Aug*
Black rhinoceroses. *Africa Threatened* map supplement. *Dec*
Black Tom Wharf, N. J.: Explosion (1916) 98 *Sep*
Blackwell, Pete **9** *Jul*
Bladen Nature Reserve, Belize: ***Pilots Help Preserve Belize Wilderness.*** Earth Almanac. *Oct*
Blair, James P., photographer: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** 124-140, *Aug;* ***Will We Save Our Own?*** 106-136, *Sep;* On Assignment. *Sep*
Blake, John, and children **73** *Aug*
Blanc, Patrick **132** *Oct*
Blanchard, Annie 60, 64 *Oct*
Blanchard, Roy 60 *Oct*
Blasket Islands, Ireland: ***A National Park on Great Blasket.*** Geographica. *Sep*
The Blast Not Heard Around the World. Earth Almanac. *Dec*
"Blue Planet": A Distant View of Earth's Problems. Earth Almanac. *Sep*
Blue sharks: ***Sharks: Predators That Need Our Protection.*** Earth Almanac. *Dec*
Board on Geographic Names *see* U. S. Board on Geographic Names
Bobadilla, Diego de 16 *Sep*
Bocce, World Series of, Rome, N. Y. (1988): Team **54** *Nov*
Bockstoce, John, author: ***Changing Images of the Northwest Passage.*** 2-33, *Aug*
Boers: Botswana 78 *Dec*
Bogotá, Colombia: Emerald trade **50,** 52, treatment labs **49,** 68 *Jul*
Bond, John 70 *Sep*
Bond, William H.: Diagram by **62** *Aug;* Paintings by **39, 56-57, 65** *Aug,* **93** *Sep*
Bonfiglio, André 11 *Oct*
Bongo, Mali: Diviner **104-105** *Oct*
Bonneville Dam, Columbia River, Wash.-Oreg.: Fish-counting station 35 *Jul;* Fishing restrictions 36 *Jul*
Books, NGS *see* Atlas, NGS
Boom, fire-resistant: ***Nonburnable Boom Corrals Marine Oil Spills.*** Earth Almanac. *Sep*
Borneo: Exports for Manila galleon trade 12, 14 *Sep*
Boro River, Botswana: Dredging proposal 63 *Dec*
Bošković, Zdeslav 103 *Aug*
Bosnia-Hercegovina (republic), Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
Botanical gardens: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug*
Boteti River, Botswana: Source 42, 46 *Dec*
Botswana:
Botswana, the Adopted Land. By Arthur Zich. Photos by Peter Éssick. 70-97, *Dec*
Agriculture: Arable land 83; Farm subsidies 84, 93, 95-96; Sorghum farming **84,** 94-96
Climate 75-76, 87
Colonial period 76-77, 78, 82, 83
Education 79; Schools **79, 92**
Exports 75, 76, 78, 83, 84, 86-88
Facts and figures 83
Health care 75, 79; Maternity ward **79**
Immigration 78, 91
Income disparity 77-78, 93
Labor force 77, 81, 91; Training center 96
Map 83
Military 78
Minerals 83; Coal mining 74, miner **74;** Diamond mines 75, **76,** 83
Politics 71, 75, 80; Campaigning **80-81,** 91; Community forums **70-71,** 85
Population 77, 96
Tribal groups 91, 93, 94
A Gathering of Waters and Wildlife. By Frans Lanting. 5-37, *Dec*
see also Okavango Delta, *outlined*
Botswana Defence Force (BDF): Attack on poachers 49 *Dec*
Bottéro, Jean: ***Some Tasty Recipes for a Babylonian Feast.*** Geographica. *Dec*
Bottini, Kara **55** *Nov*
Boudin (sausage) **40,** 53 *Oct*
Boudreaux, Chad **65** *Oct*
Boulder coral **121-122** *Jul*
boulin 115 *Oct*
Bousfield, Jack 67 *Dec*
Bowell, Edward: ***Celestial Rock Group Has a Place in the Sky.*** Geographica. *Nov*
Bowersox, Gary 55 *Jul*
Bowhead whales: Eskimo hunts 31-32, processing **24-29** *Aug*
Boxes: Emerald-and-diamond box **58** *Jul;* Emerald snuffbox **59** *Jul;* Gold filigree box **51** *Sep;* Gold writing box **58-59** *Jul*
Boxing *see* International Boxing Federation
Boy Scouts: ***Philmont Scout Ranch Grows, Goes Coed.*** Geographica. *Jul*
Boyarsky, Victor **75, 80, 87** *Nov*
Bracelets, Tellem **111** *Oct*
Bragg, Wayne G.: ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug*
Brain coral **120** *Jul*
Brasseaux, Carl 58 *Oct*
Brazauskas, Algirdas 30 *Nov*
Brazil: Emerald production 54, 55 *Jul,* mines *see* Itabira, Santa Teresinha; ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Breaking of Dawn 33 *Jul*
Bream: Anhinga prey **15** *Dec*
Breder, Charles 18-19 *Oct*
Brewer, Rachel: Death 112 *Dec;* Marriage to Charles Willson Peale 104, 106 *Dec;* Portrait **113** *Dec*
Bridesmaids: Philadelphia **82-83** *Aug*
Briggs, Geoff 53 *Aug*
Bright, Lynn. President's Page. *Dec*
Brimberg, Sisse, photographer: **Nuestra Señora de la Concepción.** 39-53, *Sep;* ***Track of the Manila Galleons.*** 5-37, *Sep*
Bristlemouths **19** *Oct*
Bristol Bay, Alas.: Fishermen **8-9** *Jul;* Freighter **28-29** *Jul;* Salmon 27, 28 *Jul*
British Columbia (province), Canada: ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul;* Map showing major forest types 120-121 *Sep; see also* Vancouver Island
Broadway, New York, N. Y.: ***Broadway, Street of Dreams.*** By Rick Gore. 57-87, *Sep*
Art galleries 67, 69
Educational institutions 80, **81;** Schools of performing arts **71,** 76, 85
Fashion industry 70, 72; Fashion show **68**
Historic preservation 70, 72-73, 84
Housing 76-77, 80, 86
Map 64
Nickname 70
Origin 64
Shops 76, 77, **82-83**
Theaters 68, 70, 73; Musicals **58-59,** 64, 69, **72,** 73, 75-76, 87
Brockport, N. Y.: Storefronts **42** *Nov*
Brockway, Hiel 42 *Nov*
Broecker, Wallace S. 81-82 *Oct*
Bromeliad **134** *Oct*
Bronze Age: ***Is This the Source of Bronze Age Tin?*** Geographica. *Oct*
Broussard, Herman 54 *Oct*
Broussard, Johnny 62-63 *Oct*
Broward, Napoleon Bonaparte 94 *Jul*
Broward County, Fla.: Well contamination 94 *Jul*
Brown, David 73 *Sep*
Brown, Robert 35, 37, 47 *Aug*

Broz, Josip *see* Tito
Brunet, Tan and Jett **56** *Oct*
Bryan, Kirk 8 *Oct*
Buchli, James: ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep*
Buffalo, N. Y. 44, 45, **46-47** *Nov;* Erie Canal heyday 48, 55 *Nov*
Buffalo: Cape buffalo **22-24, 63** *Dec*
Buffalo Convention Center, Buffalo, N. Y.: Squaredancer **49** *Nov*
Buffalo Fence, Okavango Delta, Botswana 46, 61, 64, **64, 65** *Dec*
"Buffalo gals" 48, 55 *Nov*
Bulldozer shrimp 29 *Oct*
Bullfrogs **6** *Dec*
Bumstead, Albert H. 130, **130,** 132 *Nov*
Buprestid, golden **119** *Sep*
Burial caves: Bandiagara escarpment 106, **106, 110-111,** 112, 113, 126 *Oct*
Buried "Marshmallows" Save Irrigation Water. Earth Almanac. *Aug*
buro festival **127** *Oct*
Burton, Robert 119 *Sep*
Bush, George: Old-growth forest logging policy 112 *Sep;* ***President Bush Pushes Education Effort.*** President's Page. *Dec;* Sequoia grove protection 115 *Sep*
Busheme, Joe 73 *Sep*
Bushmen 41, **50, 60, 68,** 69, 78 *Dec;* Cultural breakdown 88, 90 *Dec;* Dancer **94** *Dec;* Population 88 *Dec;* Resettlement villages 88, 90-91 *Dec;* Rock art 41, **68,** 69 *Dec*
Butterflies: Kamehameha butterfly **82** *Jul;* ***A Monarch Butterfly Population Explosion.*** Geographica. *Aug*
"butterfly effect" 82 *Oct*
Buttons, gold-filigree **50** *Sep*
Buzbee, Bill 78 *Oct*
Bylot Island, Northwest Territories, Canada: Coast **4-5** *Aug*

C

CCC *see* Civilian Conservation Corps
CFCs *see* Chlorofluorocarbons
Cajuns: ***The Cajuns: Still Loving Life.*** By Griffin Smith, Jr. 40-65, *Oct*
Acadian ties 56-58
Customs **52-53,** 58, **59**
Entertainment **46-47, 50, 51;** Music 44, 46, 53, 56
Food **40,** 48-49, 57, 61; Haute cuisine 44, **55**
Food production 48-49, 54-55, 58, 60, 61
Maps: Acadian settlement 45
Origins 44, 45, 47, 50-51
California: ***California Voters Weigh Big Environmental Plan.*** Earth Almanac. *Sep;* Salmon habitat disappearance 30, 32 *Jul; see also* Muir Woods National Monument; Redwood National Park; Sequoia National Forest; Yosemite National Park
California condors: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct*
Callahan, Ed 127 *Sep*
Callendar, G. S.: Warning of disruption of natural greenhouse effect 74 *Oct*
Camera, single-lens-reflex 18 *Oct*
Campbell, Alec 69, 75, 78 *Dec*
Campbell, Bonnie **77** *Aug*
Campbell, John A. 122 *Sep*
Can Ek (Maya ruler): ***An Eyewitness View of a Maya Ruler.*** Geographica. *Oct*
Can El Lobo Make a Comeback? Earth Almanac. *Sep*
Canada: Acadians 44, 45, 50, 56-58 *Oct;* Environmental record. Editor's Page. *Oct;* Global warming projections 87 *Oct;* ***Migratory Songbird Decline 1978-1987.*** Earth Almanac. *Oct;* Pacific salmon catch (1987), chart **19** *Jul;* Whooping crane breeding ground. Earth Almanac. *Jul; see also* British Columbia; Northwest Passage
Canals: ***Erie Canal: Living Link to Our Past.*** By Joel L. Swerdlow. 38-65, *Nov*
Cancers *see* Skin cancers
Canes, carved **85** *Aug*
Canoes, dugout: Botswana **60** *Dec;* ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul*
Cape buffalo **22-24, 63** *Dec*
Cape Coral, Fla.: Water use restrictions 89, violator **89** *Jul*
Cape mountain zebras. *Africa Threatened* map supplement. *Dec*
Caprivi Strip, Namibia: Elephants 49 *Dec*
Captive-breeding programs: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct*
Carbon dioxide 68, 74, 75, 79, 80-81 *Oct;* Atmospheric levels, increase in 72, 73, 75, 79, graphs **73, 78** *Oct;* Sources **68-69,** 79, 87, 95 *Oct*
Carbon 14: Production-rate irregularities 91 *Oct*
Cardinal fish **20-21, 22-23** *Oct*
Careri, Giovanni Francesco Gemelli 34 *Sep*
Caribbean Sea: Map showing coral reefs 124-125 *Jul*
Carlota, Empress (Mexico) 132 *Dec*
Carmanah Valley, Vancouver Island, British Columbia: Logging 133 *Sep;* Tallest tree in Canada 133 *Sep*
Carnival: Moyers Corners, N. Y. **58-59** *Nov*
Cars *see* Automobiles
Carter, Jimmy: Quilt given to 84 *Aug*
Cartography: ***Seventy-Five Years of Cartography: A Love Affair With Maps.*** By John B. Garver, Jr. 130-134, *Nov*
Carysfort Reef, Key Largo National Marine Sanctuary, Fla.: Coral **118-120** *Jul*
Casa del Risco, San Angel, Mexico: Fountain **31** *Sep*
Cassini Division 54-55 *Aug*
Castle Garden, New York, N. Y. 91 *Sep*
Cataracts: Ultraviolet radiation link 95 *Oct*
Catherine's wheel **10-11** *Sep*
Catholic Church *see* Roman Catholic Church; Ukrainian Catholic Church
Cattails 100, 104-105 *Jul*
Cattle: Botswana 47, 60-61, **64,** 65 *Dec;* Louisiana **62-63** *Oct;* Methane production 77 *Oct;* South Florida **93,** 108, herd reduction program 93, pollution source 93, 98, 100, 105 *Jul*
Cauble, Misty L. President's Page. *Aug*
Caves: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct*
Caves, underwater: ***Underground Glories of the Yucatán.*** Geographica. *Sep*
Cavite, Philippines 42 *Sep;* Fireworks **10-11** *Sep;* Porta Vaga icon **3,** 10 *Sep;* Shipyards 28, 30 *Sep*
Cebu (island), Philippines: Spanish colony 11 *Sep*
Cedars of Lebanon 136 *Sep*
Čekuolis, Algimantas 11, 30, 34 *Nov*
Celaya, Mexico: Food processing plant 137, **137** *Dec*
A Celebration of African-American Life. Photos by Roland L. Freeman. 66-91, *Aug*
Celestial Rock Group Has a Place in the Sky. Geographica. *Nov*
Cement factory: Kunda, Estonia **29** *Nov*
Centipede **119** *Sep*
Central America *see* Belize; Yucatán Peninsula
Central Kalahari Game Reserve, Botswana: Wildebeest die-off 61, 63 *Dec*
Central Valley, Calif.: Water use 30, 32 *Jul*
Centurion (man-of-war) 24, 25 *Sep;* Attack and capture of silver galleon 23, 24, 28, painting **22** *Sep*
Ceramics: ***Nonburnable Boom Corrals Marine Oil Spills.*** Earth Almanac. *Sep; see also* Porcelain
Cerianthids **18, 28-29** *Oct*
Chadwick, Floyd 62 *Nov*
Chains, gold 50, **52, 53** *Sep*
Chamberlin, Wellman: Creation of map projection 132, 133 *Nov*
Chameleons: Kalahari Desert, Botswana **5** *Dec;* Melanin experiment **91** *Oct*
Champs Gym, Philadelphia, Pa. **77** *Aug*
Chandler, Alvin M. 8 *Oct*
Changing Images of the Northwest Passage. By John Bockstoce. 2-33, *Aug*
Charles I, King (Spain): Claim over Pacific Ocean (1530) 21 *Sep*
Chatham Created Gems, Calif.: Synthetic emeralds 48, **62-63,** production process 48, 63, **63** *Jul*
Cheetahs. *Africa Threatened* map supplement. *Dec*
Cheramie, Linwood 60 *Oct*
Cherry-blossom anthias **23** *Oct*
Cherry salmon 12, **18** *Jul*
Chess game: Vērman Gardens Park, Rīga, Latvia **20** *Nov*
Chevrotains: ***Unusual Mammals Are Bred as Rain Forest Resource.*** Earth Almanac. *Jul*
Chicago Board of Trade, Chicago, Ill.: Futures trading pit **85** *Oct*
Chichimec Indians 128 *Dec;* War with Spain 129 *Dec*
Chiesa, Chris. On Assignment. *Nov*
Children Pay for Corrupted Environment. Earth Almanac. *Dec*
Chile: Aquaculture 20 *Jul*
Chimaera **12-13** *Oct*
Chimpanzees: ***Jane Goodall at Gombe: a 30th Anniversary.*** Geographica. *Aug*

China, People's Republic of: ***China Warms to U. S. Help on Fridges.*** Earth Almanac. *Nov;* Emigrants 103, 105, **105** *Sep;* Flora compilation 138, 140 *Aug; see also* Tibet
China Road 30, 36 *Sep;* Map 13 *Sep*
China trade *see* Manila galleon trade
Chinatown, New York, N. Y. 105 *Sep;* Expansion 67, 105 *Sep*
Chinoiserie: Christian images 14, **34, 35** *Sep;* Influence on European styles 14, 30 *Sep*
Chinook salmon 12, **18-19,** 24, **34,** 35 *Jul;* Aquaculture **6-7,** 28, **30, 31** *Jul;* Decline of runs 30, 33 *Jul*
Chittenango, N. Y.: Erie Canal restoration 56 *Nov*
Chivor emerald mine, Colombia 51, 52 *Jul*
Chlorine: Effects on ozone 91, 94, diagram **91** *Oct*
Chlorofluorocarbons (CFCs) 72, 75, 79, 81 *Oct;* Atmospheric levels, increase in 79, graph **78** *Oct;* ***China Warms to U. S. Help on Fridges.*** Earth Almanac. *Nov;* Ozone destruction 90, 91, 94-95, diagram **90-91** *Oct*
Chlorophyll: Role in photosynthesis 73 *Oct*
Chobe National Park, Botswana: Sign **57** *Dec;* Water hole 43 *Dec*
Chobe River, Botswana-Namibia: Elephants **18-19,** 49 *Dec*
Cholera: Nineteenth-century beliefs 56 *Nov*
Cholula, Mexico: Church **37** *Sep*
"Christ of the Deep" (underwater statue), Florida Keys, Fla. **114** *Jul*
Christler, Mel: ***Ike's Airplane Returns to the Skies.*** Geographica. *Nov*
Christopher Columbus quincentenary: ***Solar Sails Will Power Ships to a New World.*** Earth Almanac. *Sep*
Chum salmon **5, 19** *Jul;* Migration route map 18-19 *Jul*
Cidzira Lagoon, Botswana: Water lilies **42** *Dec;* Wattled cranes **42** *Dec*
Cinnamon bark **49** *Sep*
CITES *see* Convention on International Trade in Endangered Species
Citrus cultivation: Florida 98, **98-99,** 108 *Jul;* New Spain 27 *Sep*
Čiurlionis, Mikalojus K. 36 *Nov*
Civilian Conservation Corps (CCC): ***Earth Army Echoes the Fabled CCC.*** Earth Almanac. *Dec*
Claiborne, Liz: Approach to fashion business 70, 72 *Sep*
Clamor, Myrna Mella 51 *Sep*
Clark, Eugenie, author: ***Suruga Bay: In the Shadow of Mount Fuji.*** 2-39, *Oct*
Clark, Roy 129 *Sep*
Cleopatra's Mines, Sikait-Zabara region, Egypt 44, 51 *Jul*
Cleyet-Marrel, Dany **131** *Oct*
Cliff dwellers *see* Tellem
Climate: ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul;* ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct*
Climatron, Missouri Botanical Garden **132,** 135, **136-137,** i39 *Aug*
Clinton, De Witt: Construction of Erie Canal 39, 44, 50, 59 *Nov;* Reelection (1820) 50 *Nov*
Clouds: Effects on climate 82, 83 *Oct*
Cloves **49** *Sep*
Coastal redwoods: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Cobb, Charles E., Jr., author: ***Mexico's Bajío—The Heartland.*** 122-143, *Dec*
Cobb, Jodi, photographer: ***Broadway, Street of Dreams.*** 57-87, *Sep*
Cobra: Significance in ancient Egypt 111, 122, **122,** 123, **123** *Nov*
Coello, César 138 *Dec*
Coevolution, theory of 138 *Aug*
Coho salmon 12, **19** *Jul,* **117-118** *Sep;* Decline of run 30, 33 *Jul;* Life cycle 24, 26, **26-27** *Jul*
Coins, silver: Mexico 16, **32,** 37 *Sep*
Cole, Michael 15, 18 *Oct*
Coleman, Stan 132, 133 *Sep*
Collins, Ron 55 *Oct*
Colombia: ***Emeralds.*** By Fred Ward. 38-69, *Jul;* Emigrants 103 *Sep*
Columbia-Presbyterian Medical Center, New York, N. Y.: Pediatric cases 85-86 *Sep*
Columbia River and basin, U. S.-Canada: ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul*
Columbia University, New York, N. Y. 80 *Sep;* Graduation Day **80-81** *Sep;* Minority students 81 *Sep*
Columbine II (airplane): ***Ike's Airplane Returns to the Skies.*** Geographica. *Nov*
Columbus, Christopher *see* Christopher Columbus quincentenary
Combs: Gold combs **51,** 52 *Sep;* ***It's a "Lousy" Job, but Science Has to Do It.*** Geographica. *Aug*
Commerce *see* Manila galleon trade
Compass-sundial, 18th-century **27** *Sep*
Computer chips: Insertion into salmon smolts **32** *Jul*
Computer models: Archaeology **108, 109** *Nov;* Climate 75, 77-78, 80, 82, 83, 85, graph **78-79,** maps of projections 82, 83, 86-87, variables 81, 82, 83 *Oct*
Concepción (galleon) *see Nuestra Señora de la Concepción*
Condors: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct*
Conger, Clement E. **118** *Dec*
Conquistadores: Emerald looting 51, 52 *Jul*
Conrath, Barney J. **54** *Aug*
Conservation: ***Earth Army Echoes the Fabled CCC.*** Earth Almanac. *Dec;* ***A Lifelong Commitment to Conservation.*** By Gilbert M. Grosvenor. President's Page. *Jul;* ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec;* ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul;* ***Yosemite: 100 Years Later.*** By Gilbert M. Grosvenor. President's Page. *Oct; see also* Endangered and threatened species; Land use; Wildlife refuges; *and* Rain forests
Contagious Disease Hospital, Ellis Island, N. Y.: Corridor **96-97** *Sep*
Convention on International Trade in Endangered Species (CITES): Effect of ivory trade ban (1989). President's Page. *Nov;* Status of elephants 45, 49 *Dec*
Cooperstown, N. Y.: Designation as baseball's birthplace 51 *Nov*
Copley, John Singleton: Influence on Charles Willson Peale 106 *Dec*
Corals and coral reefs: ***Dreams and nightmares in Suruga's wire coral forest.*** By David Doubilet. 20-39, *Oct;* ***Florida's Coral Reefs Are Imperiled.*** By Fred Ward. 115-132, *Jul;* Soft coral **15** *Oct*
Corcuera, Don Sebastián Hurtado de 40, 45 *Sep*
Cornish, Samuel 23 *Sep*
Corona, Leonel 138-139 *Dec*
Corrales Ayala, Rafael 133 *Dec*
Cortés, Hernán: Carved emeralds 52 *Jul*
Coscuez emerald mine, Colombia 51-52 *Jul;* Uncut emerald **64** *Jul*
Cosmological principle 38 *Aug*
Covadonga (galleon) *see Nuestra Señora de Covadonga*
Cover illustrations, NGM:
July: Great egret
August: Macedonian farm women
September: Girl, Manila wedding
October: Lionfish
November: Joseph Stalin statue
December: Hippopotamus
"Covered Peaches" (Peale) **104** *Dec*
Crab Nebula: ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec*
Crabs: Giant spider crab **16-17,** 36 *Oct;* Hermit crab **37** *Oct*
Cramer, Reid 86 *Sep*
Crane, Kathleen: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Cranes: ***Fighting to Help Cranes in the Mekong Delta.*** Geographica. *Dec;* Wattled cranes **42** *Dec;* Whooping cranes. Earth Almanac. *Jul*
Crates, Jim 114 *Sep*
Crayfish: Cajun cuisine 56, 57, 58 *Oct;* Farming 49, 60 *Oct*
Cretaceous-Tertiary boundary event: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct*
Criollos: Social status in New Spain 129 *Dec*
Croat, Tom 131, 138 *Aug*
Croatia (republic), Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
Crocodiles: Botswana **30, 41,** 43, 66, farm 66-67, hatchling **67** *Dec*
Croft, Steven 45, 47 *Aug*
Crosses, 17th-century: Diamond-and-gold **39** *Sep;* Emerald-and-gold **38** *Jul*
Crossing Antarctica (Steger and Bowermaster) 93 *Nov*
Crown jewels: Iran **40-41,** 51, **58** *Jul*
Crucifixion of Christians: Nagasaki, Japan (1597) **16** *Sep*
Cruikshank, Dale 35, 37, 40, 47 *Aug*
Cryovolcanism: Enceladus 65 *Aug;* Triton 44, **44,** 45, **45,** 47, **64,** 65 *Aug*
Cubatão, Brazil: ***Children Pay for Corrupted Environment.*** Earth Almanac. *Dec*
Cuello (site), Belize: ***Oldest Known Maya: Not Quite So Old.*** Geographica. *Nov*
Cuernavaca Cathedral, Cuernavaca, Mexico: Fresco **16** *Sep*
Cui, Jenny and Wenny 105 *Sep*
Culler, Charles 65 *Sep*

Cuneiform: ***Some Tasty Recipes for a Babylonian Feast.*** Geographica. *Dec*
Cunningham, Nick 85, 86 *Sep*
Curry, Richard 130 *Jul*
Curry, William 108-109 *Jul*
Cusk eel, abyssal **13** *Oct*
Cutlass fish **18** *Oct;* Pineal window 18 *Oct*
Cutler, Manasseh 102 *Dec*
Cuvier, Baron Georges 111 *Dec*
Cypress swamps: Florida 90, 104, **110-111** *Jul*

D

D2 (dark spot), Neptune 38, **40** *Aug*
DDT: ***Osprey Populations Soar to Old Heights.*** Geographica. *Aug*
Dade County, Fla.: Landfill **95** *Jul*
Dagger, emerald-and-diamond **58-59** *Jul*
Dahe, Qin **75, 80, 81** *Nov*
Dahlberg, Michael 20 *Jul*
Daishi Maru (fishing vessel) **3,** 9, 15 *Oct*
The Dalles Dam, Columbia River, Wash.-Oreg. 14, **24-25** *Jul*
Dams *see* Bonneville Dam; The Dalles Dam; Nibutani Dam; *and* Narmada River
Damselfish **132** *Jul*
Damselflies: Hawaii 78, **78, 81** *Jul*
Dance halls: "Buffalo gals" 48, 55 *Nov;* Louisiana **50, 51,** 56 *Oct*
Dancers: Acapulco, Mexico **6-7** *Sep;* Dogon 112, **120-121,** 122-123 *Oct*
Danforth, Kenneth C., author: ***Yugoslavia: A House Much Divided.*** 92-123, *Aug*
Danforth Foundation. President's Page. *Sep*
Darley, James M. 133 *Nov*
Darmstadt, Germany: Mastodon skeleton **108** *Dec*
Davidse, Gerrit 138 *Aug*
Davis, Steve 104 *Jul*
Dawson, John D.: Painting by **81-83** *Jul*
Dean, Bert **18, 19** *Aug*
De Beers Botswana *see* Jwaneng diamond mine
DeBonis, Jeff 134 *Sep*
Decoys, duck **56** *Oct*
Deforestation: Carbon cycle disruption 75 *Oct;* ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug;* Tropical forest cut (1987). Earth Almanac. *Jul;* ***Will We Save Our Own?*** By Rowe Findley, 106-136, *Sep*
DeGrove, John M. 109, 112 *Jul*
Degutis, Aruné and Igne 30 *Nov*
Delcambre, La.: Shrimp boats **54-55** *Oct*
DePeyster, Elizabeth 112-113 *Dec*
Desalination systems: Florida 100, 109, 112 *Jul;* Research. Editor's Page. *Jul*
Detecting Lightning's Early Warning Signals. Geographica. *Oct*
De Vries, J. Pieter **54** *Aug*
DEW (Distant Early Warning) line 15 *Aug*
Dewitt, John 115 *Sep*
Diamond mining: Botswana 45, 53, 63, 75, **76,** 83 *Dec*
Diatonic accordion 57 *Oct*
Dickenson, Stirling 137 *Dec*
Dicliptera dodsonii **125** *Aug*
Digitaria 119 *Oct*
Digitizer, hand-held map **134** *Nov*
Dikomang, Mosarwa and Lebogang **74** *Dec*
Dikov, Nikolai N. 14, 16 *Jul*
Dillon, Michael: ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul*
Dingle Peninsula, Ireland *see* Blasket Islands
Diodorus Siculus: Amun's royal death pronouncements 122 *Nov*
Dirigible, hot-air: ***A Raft Atop the Rain Forest.*** By Francis Hallé, 129-138, *Oct*
Dispatches from a distant realm. By Eugenie Clark, 12-19, *Oct*
Disston, Hamilton 94 *Jul*
Distant Early Warning (DEW) line 15 *Aug*
Distant Peak Challenges Geography Bee Winner. President's Page. *Sep*
Distinguished Geography Educator Award: Recipients (1990). President's Page. *Dec*
Divers: *Concepción* wreck **52** *Sep;* ***Dreams and nightmares in Suruga's wire coral forest.*** By David Doubilet, 20-39, *Oct;* Florida Keys **114, 120, 122,** coral destruction 123, **126-127** *Jul*
Diviners, Dogon **104-105** *Oct*
Dodson, Cal 126, 131 *Aug;* Plant discovery **129** *Aug*
Dogon: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts, 100-127, *Oct*
Burial customs 112, 126
Calendar 112
Dance 112, **120, 121,** 122-123
Diviners **104-105**
Farming 119; Crops 102-103, 106, 125
Festival **127**
Granaries 108; Carved door **108;** Roof **118**
Markets 110, 112, 115
Men's house 108, **112**
Mythology 108, 109, 112
Religion 108-109, 126; Ritual sacrifice 112, **116-117**
Sequestration of women 109
Trade 119, 125
Villages **101,** 106, 108, **119;** Gardens **125**
Doll collection: Philadelphia **86-87** *Aug*
Dolores, Mexico: Revolution (1810) 129 *Dec*
Dolu, Amaguimé **104-105** *Oct*
Dominican Republic: Emigrants **82-83,** 103 *Sep*
Doubilet, David, author-photographer: ***Suruga Bay: In the Shadow of Mount Fuji.*** 2-39, *Oct*
Doubleday, Abner 51 *Nov*
Douglas, Marjory Stoneman 90, **109** *Jul;* Everglades description 94, 109 *Jul*
Douglas firs: Ecology **117-118,** 119 *Sep;* Root ecology **119** *Sep*
Downey, James 77, 80 *Sep*
Dowty, Jim: ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug*
Dragonets **15, 30** *Oct*
Dragonfly: Hawaii **81** *Jul*
Drake, Sir Francis: Discovery of Manila galleon trade (1578) 24 *Sep*
Dreadlocks **87, 90** *Aug*
Dreams and nightmares in Suruga's wire coral forest. By David Doubilet, 20-39, *Oct*
Drexel Burnham Lambert 122 *Sep*
Drift nets: ***Ghost Nets Reap a Harvest of Death.*** Earth Almanac. *Aug;* Illegal salmon fishing 18, 20 *Jul;* International condemnation 20, 21 *Jul*
Drive-in bank, first 59 *Nov*
Drought: Botswana 60-61 *Dec;* El Niño link 80 *Oct;* North America (1988). Editor's Page. *Jul;* Sahel 119, 126 *Oct*
Drugs, prescription: Plant derivatives 126 *Aug*
Druzhba collective farm, Sakhalin, U.S.S.R.: Cannery 13, **14-15** *Jul*
Dubauskas, Visvaldas **27** *Nov*
Dubrovnik, Croatia, Yugoslavia **114-115** *Aug*
Duck decoys **56** *Oct*
Dugout canoes: Botswana **60** *Dec;* ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul*
Duikers, Jentink's. *Africa Threatened* map supplement. *Dec*
Dulčić, Jakov 113 *Aug*
Duplaix, Nicole, author: ***South Florida Water: Paying the Price.*** 89-113, *Jul*
Durán, Pablo 142 *Dec*
Durlabhji, Rashmikant 57, 64 *Jul*
Duro, Fernández 21 *Sep*
Durphy, Chris 107 *Jul*
Duval, Paul 103, 107, 108-109 *Nov*
Duwamish River, Wash.: Salmon kill (1986) **10-11** *Jul*
Dzu Bushmen **68** *Dec;* Television crew filming **50-51** *Dec*

E

EC *see* European Community
EPA *see* U. S. Environmental Protection Agency
Eagle Island, Casco Bay, Me.: ***Restoring the Library of Peary's Island Home.*** Geographica. *Jul*
Eagles: African fish eagle **14-15** *Dec;* Bald eagle **37** *Jul*
Eagles, metal: Ferry Building, Ellis Island **96** *Sep*
Earle, Sylvia A.: ***Should We Set Aside Ocean Wilderness?*** Earth Almanac. *Nov*
Earrings: Contemporary design **65, 66** *Jul;* Kushite **98** *Nov;* Roman **53** *Jul*
Earth: ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep;* ***Is Our World Warming?*** By Samuel W. Matthews, 66-99, *Oct;* Views from space 52, **53, 55** *Aug*
Earth Almanac: Introduction of feature. *Jul*
Earth and moon: View from space 52, **53** *Aug*
Earth Army Echoes the Fabled CCC. Earth Almanac. *Dec*
Earth Conservation Corps: ***Earth Army Echoes the Fabled CCC.*** Earth Almanac. *Dec*
Earth First!: Logging protest **133** *Sep*
Earwig **119** *Sep*

East African Rift system, Africa *see* Okavango Delta
East Indies: Spice trade 8, 12, 14 *Sep*
Eastern sarus cranes: ***Fighting to Help Cranes in the Mekong Delta.*** Geographica. *Dec*
Eaton, Dick 88 *Dec*
Ebersolt, Gilles **128, 131** *Oct*
Ecuador: Emigrants 103 *Sep;* Orchid species 131 *Aug;* Rain forest 126, 130-131 *Aug*
Eddy, John A. "Jack" **81,** 86, 88 *Oct*
Editor's Page *see* From the Editor
Education: ***Fans of the Geographic in an Estonian School.*** Geographica. *Sep;* ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug;* ***Helping Youngsters Understand Geography.*** Geographica. *Aug;* ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep, Dec;* ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul*
Education Foundation *see* National Geographic Society Education Foundation
Edwards, Peter N. **54** *Aug*
Eels: Moray eels **19, 31** *Oct;* Snake eels **26, 27** *Oct; see also* Cusk eel
Efanov, Valery 14, **17** *Jul*
Egrets: Black egrets **12-13** *Dec;* Great egrets **110,** ***cover.*** *Jul*
Egypt, ancient: Emerald mine 44, 51 *Jul;* ***Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov*
Ehaloak, Albert, Vera, and children **31** *Aug*
Ehlers, Diane. President's Page. *Sep*
Ehrlich, Paul: Theory of coevolution 138 *Aug*
Eisenhower, Dwight D.: ***Ike's Airplane Returns to the Skies.*** Geographica. *Nov*
El-Amin, Babiker Mohammed 103 *Nov*
Elan ski factory, Slovenia, Yugoslavia **118** *Aug*
Eland: Rock art **68** *Dec*
El Bajío (region), Mexico: ***Mexico's Bajío—The Heartland.*** By Charles E. Cobb, Jr. 122-143, *Dec*
Agriculture 128-129; Exports 137, 138-139; Harvesting methods **130, 131**
Altitude 125
Fiestas 129, 134-135
History 125, 127, 128-129
Industry 127-129, 132, 136, **137,** 137-138; Pollution 142
Population 125
Silver 125, 127; Mines 127-129, 136, **137**
Urbanization 132, 142
Volcanic activity 125, 128
War of independence 129
Water table 142
Workers in U. S. 139, 142
El Chichón (volcano), Mexico: ***Ash from a Volcano: It May Remain Aloft.*** Geographica. *Nov*
Electricity: ***Electricity Generation.*** Earth Almanac. *Nov;* ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug;* Solar panel fields **70-71,** 81 *Oct;* Wind turbine generators 81, **92-93** *Oct*
Elephants, African **2-4, 18-19** *Dec; Africa Threatened* map supplement. *Dec;* ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec;* ***Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov*
Eliezri, Eli 60, 61 *Jul*
Elk, Roosevelt **109** *Sep*
Elkhorn coral **118-120, 122-123, 127** *Jul;* White band disease **130** *Jul*
El Kurru (site), Sudan: Kushite tombs **112-114,** artifacts **115-117** *Nov*
Ellis Island, New York, N. Y.: ***New Life for Ellis Island.*** By Alice J. Hall. 89-101, *Sep*
El Niño: Droughts 80 *Oct;* ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul*
Embocadero, San Bernardino Strait, Philippines 12, 32 *Sep*
Emeralds. By Fred Ward. 38-69, *Jul*
Color 44, 48, 62
Composition 44, 49, 62
Cutting **56, 57,** 60-61, 64; Factory **60-61**
Definition 62; Controversy 48, 51
Inclusions 49, **49, 63,** 65, 69; Treatment *see* Oiling, *below*
Mining 44, **45, 46-47,** 51, 54, 55, 57, 59, 65, **68**
Oiling **49,** 65, 68-69
Production 55, earliest 44, 51; Map 54
Smuggling 43, 55, 57, 59-60, 61, 64, 65
Synthetics 48, **62-63**
Uncut stones **38-39, 64;** Roughs **42-43, 57, 60**
Value 44
Enceladus (Saturnian moon) **65** *Aug*
Endangered and threatened species: *Africa Threatened* map supplement. *Dec;* ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct;* ***Fighting to Help Cranes in the Mekong Delta.*** Geographica. *Dec;* ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct;* Global warming threat 86-87 *Oct;* ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug;* ***Sharks: Predators That Need Our Protection.*** Earth Almanac. *Dec;* ***She Crusades to Save the Wildflowers of Spring.*** Earth Almanac. *Jul;* ***Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov;* ***Wolves in Study Shot, Killed in Minnesota.*** Geographica. *Oct; see also* Northern spotted owls
Endangered Old-Growth Forests. By Rowe Findley. 106-136, *Sep*
Energy sources: ***Electricity Generation.*** Earth Almanac. *Nov;* ***Inventor Makes Fuel to Challenge Gasoline.*** Earth Almanac. *Nov; see also* Firewood; Oil industry; Solar energy; Wind power
Engelmann, George 134 *Aug*
Engeset, Roger 27, 28 *Jul*
Entomology *see* Insects
Environmental concerns: ***California Voters Weigh Big Environmental Plan.*** Earth Almanac. *Sep;* ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct;* ***Planet Walker Ends His Long Silence.*** Earth Almanac. *Aug;* ***Poor Grade on a Global Test.*** By William Graves. Editor's Page. *Oct; see also* Conservation; Deforestation; Pollution; Water resources
Environmental Defense Fund: ***India's Giant Water Project Continues.*** Earth Almanac. *Sep;* ***Poor Grade on a Global Test.*** By William Graves. Editor's Page. *Oct*
Epilogue to a Space Odyssey. By William Graves. Editor's Page. *Aug*
"An Epistle to a Friend, on the Means of Preserving Health" (Peale) 113, 116 *Dec*
Epperson, Chuck 125 *Sep*
Erie Canal, N. Y.: ***Erie Canal: Living Link to Our Past.*** By Joel L. Swerdlow. 38-65, *Nov*
Construction 39, 45, 56; Completion 39, 44; Laborers 49-50, 56, 59
Cost 44; Funding 39, 44, 50, 59
Engineering 42, 44, 49-50
Immigrant traffic 45, 48, 55, 56
Length 39, 44; Rerouting 39, 42, 45
Locks 42, 44, **44,** 50, **62;** Tallest 45
Map 44-45
Mechanized barges 42, 45, **64-65**
Passenger accommodations 48
Pollution 47, 62, 64; Cleanup efforts 62, 64
Profitability 39, 44, 53, 55; Decline 39, 45, 48, 55
Romanticized reputation 39, 43, 48, 55; Underclass exploitation 56, 59
Speed of transport 44, 48; Fines for excess speed 63
Erusile Freeda (voodoo saint): Priestess evoking **76** *Aug*
Eskimos: ***Eskimos pull together for a whale harvest.*** By Richard Olsenius. 25-29, *Aug; see also* Inuit
Esmerian, Ralph: Belt designed by **66-67** *Jul*
"Essay to Promote Domestic Happiness" (Peale) 116 *Dec*
Essick, Peter, photographer: ***Botswana, the Adopted Land.*** By Arthur Zich. 70-97, *Dec*
Estonia: ***The Baltic Nations.*** By Priit J. Vesilind. 2-37, *Nov;* ***Fans of the Geographic in an Estonian School.*** Geographica. *Sep;* ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul*
Ethiopia: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Ethnology: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct;* ***The Cajuns: Still Loving Life.*** By Griffin Smith, Jr. 40-65, *Oct;* ***Philadelphia's African Americans: A Celebration of Life.*** Photos by Roland L. Freeman. 66-91, *Aug*
Etienne, Jean-Louis **75, 78, 80, 87** *Nov;* Editor's Page. *Nov*
Etsha, Botswana: Baskets **48** *Dec*
Eunice, La.: Cajun Radio show 47 *Oct;* Dance hall 50 *Oct;* Music store **46-47,** 56 *Oct*
Europa (Jovian moon) 50, **50,** 53, 62, **62-63** *Aug*
Europe *see* Baltic States; Ireland; Italy; Union of Soviet Socialist Republics; Yugoslavia

European Community (EC): Botswanan beef imports 87-88 *Dec;* Disease-free beef standards 47, 61 *Dec*
Eutrophication: Lake Okeechobee, Fla. 98-99, 100 *Jul*
Evangel Temple Church of Deliverance, Philadelphia, Pa.: Church supper **88** *Aug*
Evans, Brock 134 *Sep*
Everglades (region), Fla.: ***South Florida Water: Paying the Price.*** By Nicole Duplaix. 89-113, *Jul*
Drainage attempts, 19th-century 94
Fire **112-113;** Destruction of soil 94
Saw grass 94, **109;** Displacement by cattails 100-101, 104-105
Water flow, natural 94; Restoration effort 96, 101, 103, 104, 107, 109
Wildlife 104, **110-111,** ***cover;*** Alligator tracks **113;** Bird population decline 104, 111
Everglades Agricultural Area, Fla. 96 *Jul;* Agricultural runoff 98-99, 100, 104-105 *Jul;* Soil loss 98, 104, marker **105** *Jul*
Everglades National Park, Fla.: Expansion legislation (1989) 104 *Jul;* Opening (1947) 100, 103 *Jul*
Ewer, 17th-century gold 40 *Sep;* Fragment **42** *Sep*
"The Exhumation of the Mastodon" (Peale) **109** *Dec*
Exotic species *see* Wildlife introduction
EXPLORER (cable TV series): Rain forest canopy research 138 *Oct*
Extinctions: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct;* Projections 126, 129, 140 *Aug*
Exxon Valdez oil spill (1989): Impact on salmon 26-27 *Jul;* ***Nonburnable Boom Corrals Marine Oil Spills.*** Earth Almanac. *Sep*
An Eyewitness View of a Maya Ruler. Geographica. *Oct*

F

Fairs: Trade fairs, New Spain 35, 36, painting **30** *Sep*
Fans of the Geographic in an Estonian School. Geographica. *Sep*
Fascell, Dante 126 *Jul*
Fashion show: New York, N. Y. **68** *Sep*
Fejej (site), Ethiopia: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Ferdinand II, King (Aragon): Plan to overtake Portuguese spice trade 8 *Sep*
Fernald, Edward. President's Page. *Dec*
Ferns: Hawaii **79, 81-82, 82-83** *Jul*
Ferorelli, Enrico, photographer: ***Kingdom of Kush.*** 96-125, *Nov*
Ferrara, Rosalie **54** *Nov*
Fertilizer: Guano 100, 110, 115 *Oct*
Festivals Acadiens, Lafayette, La. 58 *Oct*
Field of Blackbirds, Battle of 100 *Aug*
Fighting to Help Cranes in the Mekong Delta. Geographica. *Dec*
Filigree, 17th-century Asian gold **50, 51** *Sep*
Finding a Tiny Lemur Is No Easy Task. Geographica. *Sep*
Findley, Rowe, author: ***Will We Save Our Own?*** 106-136, *Sep;* On Assignment. *Sep*
Finger bells, Tellem **111** *Oct*
Finley, Mike 103, 105 *Jul*
Finney, Don 129 *Sep*
Fir trees: Douglas firs **117-118,** 119, **119** *Sep*
Fires: Everglades 94, **112-113** *Jul;* ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct;* Okavango Delta, Botswana **44,** 45 *Dec*
Firewood: African reliance on as primary energy source 95 *Oct;* ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug*
Fireworks: Philippines **10-11** *Sep*
First Schwenkfelder Church, Philadelphia, Pa.: Congregation **68-69** *Aug*
Fish eagle, African **14-15** *Dec*
Fishermen, "lookbox" 36, **37** *Oct*
Fishes: ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul;* ***Sharks: Predators That Need Our Protection.*** Earth Almanac. *Dec;* ***Suruga Bay: In the Shadow of Mount Fuji.*** By David Doubilet and Eugenie Clark. 2-39, *Oct*
Fishing industry: ***Ghost Nets Reap a Harvest of Death.*** Earth Almanac. *Aug;* ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul*
Flagler, Henry 94 *Jul*
Flake, Marshall 15 *Oct*
Flecker, Michael 50 *Sep*
Fleming, Kevin, photographer: ***The Peales: America's First Family of Art.*** 98-121, *Dec;* ***South Florida Water: Paying the Price.*** 89-113, *Jul*
Fletcher, Sylvia, and family **66-67** *Aug*
Flies: *Phlebotomus* fly 138 *Oct;* Pomace fly **78, 82** *Jul;* Tsetse fly 60, 65 *Dec*
Flint, Richard W. 102 *Dec*
Flora of China 138, 140 *Aug*
Florida:
Florida's Coral Reefs Are Imperiled. By Fred Ward. 115-132, *Jul*
South Florida Water: Paying the Price. By Nicole Duplaix. 89-113, *Jul*
Drought 89, 90, 103-104, 112
Hurricane losses (1920s) 94, 100
Map of watershed 100-101
Rainfall 90, 94
Satellite image **90-91**
Soil **104;** Fertility 94, 104; Loss 94, 98, 104
Water management: History 94, 96, 100; *see also* South Florida Water Management District, *outlined*
Water pollution: Agricultural pollutants 93, 98-99, 100, 104-105; Intrusion of seawater 101, 109, 112; Landfill leakage 94, 109; Pollution-control measures 93, **95, 98,** 103, 105, 107, 108, 109
Water supply: Desalination systems 100, 109, 112
Water use: Daily per capita use 90, 92; Reduction efforts 89, 112
Florida Bay: Turtle grass survey **108** *Jul;* Wading birds 104 *Jul*
Florida Boy's Barbecue, Philadelphia, Pa. **88-89** *Aug*
Florida Geographic Alliance: Kiwanis Club support. President's Page. *Dec*
Florida Keys: ***Florida's Coral Reefs Are Imperiled.*** By Fred Ward. 115-132, *Jul;* Water supply 108-109 *Jul*
Florida Keys National Marine Sanctuary: Proposed establishment 124, 126 *Jul*
Florida Kiwanis Clubs Lend Material Support. President's Page. *Dec*
Florida panthers: Habitat 104 *Jul,* threat to 86 *Oct;* Painting **86** *Oct;* Range map 87 *Oct*
Flying squirrel **118** *Sep*
Fobes, Natalie, photographer: ***Long Journey of the Pacific Salmon.*** 3-37, *Jul*
Folding-door spider **119** *Sep*
Folse, John 46 *Oct*
Fontenot's Lounge, Basile, La. **50** *Oct*
Foot-and-mouth disease: Botswana 61, 65 *Dec*
Footprints on the Trail of the Earliest Humans. Geographica. *Oct*
Forest, Timothy. President's Page. *Sep*
Forest Brothers (Estonian resisters) 10 *Nov;* Last survivor 10, **11** *Nov*
Forest fires: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Forest Service, U. S.: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Forests: ***Old-Growth Forests: The Good News and the Bad.*** By William Graves. Editor's Page. *Sep;* ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep; see also* Deforestation; Rain forests, tropical
Foret, Michael 51, 65 *Oct*
Forsman, Eric 127-128 *Sep*
Fort Beauséjour, New France: English takeover (1755) 50 *Oct*
Fort San Diego, Acapulco, Mexico **28-29** *Sep*
Fort Washington Armory, New York, N. Y.: Homeless shelter 86 *Sep*
Fossil fuels: Carbon dioxide production 68, 72, 73, 79 *Oct*
Foster, Jennifer **87** *Sep*
Fountain, porcelain mosaic **31** *Sep*
Fourier, Jean 74 *Oct*
Foxes: Role in Dogon fortune-telling 105, 108 *Oct*
France: Environmental record. Editor's Page. *Oct*
Francis, John: ***Planet Walker Ends His Long Silence.*** Earth Almanac. *Aug*
Francisco, Don Juan 45 *Sep*
Francistown, Botswana: Hospital **79** *Dec;* School **79** *Dec*
Franken, Peter A.: **Glasnost** ***Produces a Death Ray for Locusts.*** Earth Almanac. *Oct*
Franklin, Benjamin: Comment on Iroquois Confederacy 43 *Nov;* Contribution to Peale's museum 101 *Dec*
Franklin, Jerry 136 *Sep*
Franklin, Sir John: ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep;* Northwest Passage exploration 13, 33 *Aug*
Franz Ferdinand, Archduke (Austria) 105, 106, 108 *Aug*
Fraternity members **90-91** *Aug*
Fred's (dance hall), Mamou, La.: Saturday morning crowd **51** *Oct*

Freeman, Roland L., photographer: ***Philadelphia's African Americans: A Celebration of Life.*** 66-91, *Aug*
French and Indian War: Acadian deportation 45, 50-51 *Oct*
French Creoles: Louisiana 44 *Oct*
French Guiana: ***A Raft Atop the Rain Forest.*** By Francis Hallé. 129-138, *Oct*
Fridriksson, Sturla: ***Witnessing Creation on the "Newest Island."*** Geographica. *Oct*
Friedrich, Otto, author: ***The Peales: America's First Family of Art.*** 98-121, *Dec*
Frogfish **2** *Oct*
Frolikha Bay, Lake Baykal, U.S.S.R.: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
From the Editor (William Graves):
July: ***Water—The Growing Crisis.***
August: ***Epilogue to a Space Odyssey.***
September: ***Old-Growth Forests: The Good News and the Bad.***
October: ***Poor Grade on a Global Test.***
November: ***Antarctica: the New Challenge.***
December: ***Okavango: Africa's Wild Treasure.***
From the President (Gilbert M. Grosvenor):
July: ***A Lifelong Commitment to Conservation.***
August: ***Hands-On High Technology.***
September: ***The President's Report on the Education Foundation.***
October: ***Yosemite: 100 Years Later.***
November: ***Will the Ban on Ivory Trade Save Africa's Elephants?***
December: ***The President's Report on the Education Foundation.***
Front Range, Colo.: Sunset **66-67** *Oct*
Fuchs, Arved 76, 94, 95, **95** *Nov;* Editor's Page. *Nov*
Fuels: ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug;* ***Inventor Makes Fuel to Challenge Gasoline.*** Earth Almanac. *Nov; see also* Oil industry
Fuji, Mount, Japan **3-4** *Oct;* Eruption (1707) 27 *Oct*
Fuller, Gene 124 *Sep*
Funatsu, Keizo **75,** 76, **76, 86-87** *Nov;* Whiteout survival 68, 69, 90, **91,** 92 *Nov*
Fungi: Mycorrhizal fungi **119** *Sep;* White pocketrot **119** *Sep*
Furious Whigs 101 *Dec*

G

GCMs *see* General Circulation Models
GIA *see* Gemological Institute of America
Gaborone, Botswana 85 *Dec;* Boy sniffing glue **89** *Dec;* Housing shortage 91 *Dec;* Population growth 85 *Dec;* Supermarket **84** *Dec;* Train **72-73** *Dec*
Gaillarde, Raphael, photographer: ***A Raft Atop the Rain Forest.*** 129-138, *Oct*
Galleons *see* Manila galleon trade
Gänsicke, Susanne 98 *Nov*
Ganymede (Jovian moon): Cryovolcanism 47 *Aug*
García Moll, Roberto: ***An Eyewitness View of a Maya Ruler.*** Geographica. *Oct*
Gardens: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug;* ***She Crusades to Save the Wildflowers of Spring.*** Earth Almanac. *Jul*
Garment industry: New York, N. Y. 70, 72, 105 *Sep*
Garver, John B., author: ***Seventy-Five Years of Cartography: A Love Affair With Maps.*** 130-134, *Nov*
Gasennelwe, Ben 86 *Dec*
Gates Foundation. President's Page. *Sep*
A Gathering of Waters and Wildlife. By Frans Lanting. 5-37, *Dec*
Gaurs: ***Unusual Mammals Are Bred as Rain Forest Resource.*** Earth Almanac. *Jul*
Geese **10** *Jul; nēnē* **83,** 85, **85** *Jul*
Gemological Institute of America (GIA) 48, 64 *Jul*
Gems: ***Emeralds.*** By Fred Ward. 38-69, *Jul*
General circulation models (GCMs) 77-78 *Oct*
General Sherman (sequoia): ***Still Champ After Half a Century.*** Earth Almanac. *Dec*
Gentry, Al 138 *Aug*
Geographic names: ***After a Century, the Name's Still the Game.*** Geographica. *Oct*
Geography bee *see* National Geography Bee
Geography education: ***Helping Youngsters Understand Geography.*** Geographica. *Aug;* ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep, Dec; see also Jason* project
Geometric tortoises. *Africa Threatened* map supplement. *Dec*
George, Craig 6, 7, 28 *Aug*
George, Levi 36 *Jul*
Georgetown Day School, Washington, D. C.: ***Fans of the Geographic in an Estonian School.*** Geographica. *Sep*
Germany, West: Environmental record. Editor's Page. *Oct*
Getting to the Root of the Firewood Problem. Earth Almanac. *Aug*
Ghanzi, Botswana: Cattle ranching 87, 88 *Dec;* Dairy farm 96 *Dec*
Ghee, Pernell "Nell Ski" **73** *Aug*
Ghost Nets Reap a Harvest of Death. Earth Almanac. *Aug*
Ghost pipefish **32-33** *Oct*
Giant spider crab **16-17,** 36 *Oct*
Gibbons, Boyd, author: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** 124-140, *Aug*
Gibson, Mark: ***Inventor Makes Fuel to Challenge Gasoline.*** Earth Almanac. *Nov*
Ginetz, Ron 28-29 *Jul*
Giraffes **52-53** *Dec;* Rock art **68** *Dec*
Gjoa Haven, King William Island, Northwest Territories, Canada **9,** 31 *Aug*
Gjuzel, Bogomil 109-110 *Aug*
Glasnost ***Produces a Death Ray for Locusts.*** Earth Almanac. *Oct*
Global warming 126 *Aug;* ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct;* ***Poor Grade on a Global Test.*** By William Graves. Editor's Page. *Oct*
Globe, jewel-encrusted **40-41** *Jul*
Gloxinia dodsonii **129** *Aug*
Glue sniffing: Gaborone, Botswana **89** *Dec*
Goa, India: Ivory carving **35** *Sep*
Gobies, *hanahaze* **28,** 29 *Oct*
Gold: **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep*
Goldblatt, Peter 138 *Aug*
Golden buprestid **119** *Sep*
Golden Gate Estates, Naples, Fla. **107** *Jul*
Golden lion tamarins: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Golf ball coral: Florida Keys **130** *Jul*
Gomare Fault, Africa 46 *Dec*
Gombe National Park, Tanzania: ***Jane Goodall at Gombe: a 30th Anniversary.*** Geographica. *Aug*
Gondo Plain, Mali: Dogon fields 119 *Oct,* Well **103** *Oct*
Gonzalez, Victor: ***Pilots Help Preserve Belize Wilderness.*** Earth Almanac. *Oct*
Goodall, Jane: ***Jane Goodall at Gombe: a 30th Anniversary.*** Geographica. *Aug*
Goode, W. Wilson: Quilt given to 84 *Aug*
Goodman, David 103 *Nov*
Goose Island, N. Y.: Nineteenth-century life 55 *Nov*
Gorbunovs, Anatolijs **16-17** *Nov*
Gore, Albert, Jr.: Warning of global warming 80 *Oct*
Gore, Christopher 64 *Sep*
Gore, Rick, author: ***Broadway, Street of Dreams.*** 57-87, *Sep;* ***Neptune: Voyager's Last Picture Show.*** 35-47, *Aug*
Gorillas: *Africa Threatened* map supplement. *Dec;* ***Koko at Play Outdoors: She Needs Her Space.*** Geographica. *Nov*
Gospel music: Philadelphia 79 *Aug;* Singers **79** *Aug*
Gould, Jay: Estate **84** *Sep*
Gould, Stephen Jay 47 *Aug*
Gourds: ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug*
Grace, Daddy C. M. 80 *Aug*
Graham, Bob 99, 103, 126 *Jul*
Graham, Donald 15, 20 *Aug*
Graham, Elizabeth: ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Grajal, Alejandro: ***Whatzat? An Odd Bird With a Cow's Stomach.*** Geographica. *Jul*
Grand Canyon, Ariz.: Air pollution. Earth Almanac. *Jul*
Granger, Weldon 51, 53 *Oct*
Granger, Willis and Edith 53 *Oct*
Grant, Sandy 78 *Dec*
Grard, Pierre **134** *Oct*
Graves, William *see* From the Editor
Gray, Asa 134 *Aug*
Gray, Don 40 *Aug*

Gray wolves: ***Wolves in Study Shot, Killed in Minnesota.*** Geographica. *Oct*
Great Blasket Island, Ireland: ***A National Park on Great Blasket.*** Geographica. *Sep*
Great blue herons: Rookery **60-61** *Nov*
Great Britain: Attacks on Spanish galleons 21, 23, 24-25, 28, painting **22** *Sep;* Environmental record. Editor's Page. *Oct*
Great Dark Spot, Neptune **34,** 35, **41, 60,** 61 *Aug*
Great egrets **110,** ***cover.*** *Jul*
Great Lakes, U. S.-Canada: Sea lamprey devastation 47 *Nov;* ***Shipborne Shellfish the Worst of Alien Pests.*** Earth Almanac. *Nov*
Great Red Spot, Jupiter **50,** 52, **60-61** *Aug*
Green, Janie **79** *Aug*
Green cards 103 *Sep*
Green flash **99** *Oct*
Greenberg, Jerry, photographer: ***Florida's Coral Reefs Are Imperiled.*** 115-132, *Jul;* On Assignment. *Jul*
Greenhouse effect: ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct;* ***Poor Grade on a Global Test.*** By William Graves. Editor's Page. *Oct*
Greenhouse gases 72, 74, 75, 79, 80-81 *Oct;* Atmospheric levels, increase in 75, 98, graphs **78** *Oct; see also* Carbon dioxide; Chlorofluorocarbons; Methane; Nitrous oxide
Greenhouses: ***Harnessing Greenhouses to Purify Sewage.*** Earth Almanac. *Oct; see also* Climatron
Greening of an Argentine City, a Century Old. Earth Almanac. *Aug*
Greenland ice cap: Effects of global warming 77 *Oct*
Grekin, Roy **88** *Oct*
Griffiss Air Force Base, Rome, N. Y.: Bombers **56** *Nov*
Griffiths, Jesse: ***After Nazi Prison a "Full, Unselfish Life."*** Geographica. *Dec*
Grito de Dolores (Hidalgo) 129 *Dec*
Grosvenor, Gilbert M., author: ***New Atlas Explores a Changing World.*** 126-129, *Nov; see also* From the President
Groundwater contamination: Landfill leakage 94, 109 *Jul;* Saltwater intrusion 101, 109, 112 *Jul*
Guanajuato (city), Mexico **124-125** *Dec;* Municipal cemetery **140-141** *Dec;* Political rally **132-133** *Dec;* Revolution (1810) 125, 129 *Dec*
Guanajuato (state), Mexico: Agriculture **130-131,** 139 *Dec;* Food processing plants 136, 137-138, **137** *Dec;* Silver mines 127-129, tunnel **137** *Dec*
Guano collecting: Dogon 100, **110,** 115 *Oct*
guaqueros (treasure hunters): Colombian emerald mines **46-47,** 54 *Jul*
Guastavino, Rafael: Ellis Island Main Building ceiling construction 98, **99** *Sep*
Guidry, Ron 53 *Oct*
Guiton, Bonnie: ***Earth Army Echoes the Fabled CCC.*** Earth Almanac. *Dec*
Gujar Kili emerald mine, Pakistan 55 *Jul*
Gunnera **81, 87** *Jul*
Günther, Albert: ***Finding a Tiny Lemur Is No Easy Task.*** Geographica. *Sep*
Gupta, Suresh 61, 64 *Jul*
Gurnett, Donald A. **54** *Aug*
Gurney, James M., artist: ***Kingdom of Kush.*** 96-125, *Nov*
Guyana: Emigrants 103 *Sep*
Guzmán, Doña Catalina de: Gold comb **51,** 52 *Sep*
Gypsum: ***Buried "Marshmallows" Save Irrigation Water.*** Earth Almanac. *Aug*
Gypsy (Robbins) 64, 87 *Sep*

H

H. G. Enderlein foundry, Philadelphia, Pa.: Worker **76** *Aug*
Hadley, Mac **91** *Oct*
Hagahai tribespeople: ***A New Guinea People Battles for Survival.*** Geographica. *Jul*
Haggart, Robert R. 57, 58, 65 *Nov*
Hairy-eared dwarf lemurs: ***Finding a Tiny Lemur Is No Easy Task.*** Geographica. *Sep*
Haiti: Emigrants 103 *Sep*
Haitian voodoo: Altar **74-75** *Aug;* Priestess 75, **76,** 77 *Aug*
Hale, Matt 113 *Oct*
Hall, Alice J., author: ***Immigration Today: New York's New Immigrants.*** 103-105, *Sep;* ***New Life for Ellis Island.*** 89-101, *Sep*
Hall-Martin, Anthony. President's Page. *Nov*
Hallé, Francis, author: ***A Raft Atop the Rain Forest.*** 129-138, *Oct*
Hallo, William W.: ***Some Tasty Recipes for a Babylonian Feast.*** Geographica. *Dec*
Hamilton (warship): ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug*
Hamilton Heights, New York, N. Y. **82-83** *Sep*
Hammel, Heidi 35 *Aug*
Hammond, Norman: ***Oldest Known Maya: Not Quite So Old.*** Geographica. *Nov*
Hands-On High Technology. By Gilbert M. Grosvenor. President's Page. *Aug*
Hanel, Rudolph A. **54** *Aug*
Hansen, Candy 54 *Aug*
Hansen, James 80, **81** *Oct*
Hapi (Egyptian god): Tomb painting **113** *Nov*
Hardbattle, John 88 *Dec*
Harel, Ben-Zion 61 *Jul*
Harlem School of the Arts, New York, N. Y. 85 *Sep*
Harmattan winds 102, 103 *Oct*
Harned, Steve: ***Detecting Lightning's Early Warning Signals.*** Geographica. *Oct*
Harnessing Greenhouses to Purify Sewage. Earth Almanac. *Oct*
Hart-Celler Act (1965) 104 *Sep*
Hartgrove, Ronald Winston: Earrings designed by **66** *Jul*
Harvard University, Cambridge, Mass.: Peale collection **106** *Dec*
Harwich, Mass.: ***Harnessing Greenhouses to Purify Sewage.*** Earth Almanac. *Oct*
Hatfield, Mark 134 *Sep*
Hathor (Egyptian goddess): Image **124** *Nov;* Ornament **116** *Nov*
Hawaii: ***Hawaii's Volcanic Cradle of Life.*** By William H. Amos. 70-87, *Jul; see also* Mauna Loa Observatory
Hawke, Fred and Gary 125, 127 *Sep*
Haynes, Norman R. **54** *Aug*
Heda, Japan 9 *Oct*
Heliopause 56 *Aug*
Helping Youngsters Understand Geography. Geographica. *Aug*
Heminway, Diane 63, 64, 65 *Nov*
Hemp, Manila **18** *Sep;* Galleon rigging 18, 28 *Sep*
Henning, Willem 84 *Dec*
Henry Shaw School of Botany, Washington University, St. Louis, Mo. 134 *Aug*
Herald Square, New York, N. Y. 70 *Sep*
Herbariums: France 138 *Aug;* Missouri Botanical Garden 126, 129, **140** *Aug*
Herbert Hoover Dike, Lake Okeechobee, Fla. 94 *Jul*
Herculaneum, Italy: ***Theft at Herculaneum: 280 Artifacts Stolen.*** Geographica. *Jul*
Hermans, Quill 78 *Dec*
Hermit crab **37** *Oct*
Herons, great blue: Rookery **60-61** *Nov*
Herridge, Catherine 80 *Sep*
Herschel Island, Northwest Territories, Canada: American whaling fleet base 14 *Aug;* Oil industry 14, 32, offshore drilling vessel **7** *Aug*
Hesselius, John 106 *Dec*
Hester, Randolph T., Jr. President's Page. *Oct*
Heyerdahl, Thor: ***Heyerdahl Still Busy, on Land This Time.*** Geographica. *Sep*
Hiawatha: Creation of Iroquois Confederacy 43 *Nov*
Hidalgo y Costilla, Miguel 129 *Dec*
Hiddenite, N. C.: Emerald mines 57 *Jul*
Hill of Crosses, Šiauliai, Lithuania **34-35** *Nov*
Hinson, Glenn 70 *Aug*
Hinton, Mary 109 *Jul*
Hippopotamuses **9,** 41-42, 43, ***cover.*** *Dec*
Hirasawa, Byozan: Watercolor by **21** *Jul*
History, U. S.: ***Erie Canal: Living Link to Our Past.*** By Joel L. Swerdlow. 38-65, *Nov;* ***Immigration Today: New York's New Immigrants.*** By Alice J. Hall. 103-105, *Sep;* ***New Life for Ellis Island.*** By Alice J. Hall. 89-101, *Sep;* ***The Peales: America's First Family of Art.*** By Otto Friedrich. 98-121, *Dec*
Hoatzins: ***Whatzat? An Odd Bird With a Cow's Stomach.*** Geographica. *Jul*
Hobdy, Bob **87** *Jul*
Hoffman, John: ***China Warms to U. S. Help on Fridges.*** Earth Almanac. *Nov*
Hohner, Martin. President's Page. *Sep*

Hokkaido (island), Japan: Ainu 12, **20-22,** 25 *Jul*
Holden, Lynn 108, 111 *Nov*
Holst, Bruce: Plant discovery **129** *Aug*
Homeless people: New York, N. Y. **65,** shelter 86 *Sep*
Homes for Wildlife in Unexpected Places. Earth Almanac. *Jul*
Hominids: ***Footprints on the Trail of the Earliest Humans.*** Geographica. *Oct; **Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Hooker, Sir William Jackson 134 *Aug*
Hoquiam, Wash.: Log-filled freighter **127** *Sep*
Horn, Sharon Kinney: ***Helping Youngsters Understand Geography.*** Geographica. *Aug*
Horsemen: Vermilion Parish, La. **62-63** *Oct*
Horses: Introduction to Egypt 114 *Nov;* Kushite cemetery 114 *Nov;* Tribute to Kushite king **104-105** *Nov*
Horton, Carla **82** *Aug*
Hot-air dirigible: ***A Raft Atop the Rain Forest.*** By Francis Hallé. 129-138, *Oct*
Hotel Latvia, Rīga, Latvia: Floor show **20-21** *Nov*
Hsieh Wen Shen: Kissimmee River study 108 *Jul*
Huapango, Mexico: Work force 142 *Dec*
Hubble space telescope. Editor's Page. *Aug*
Hughes, Malcolm 88, 91 *Oct*
Huizinga, Johan 115 *Oct*
Humboldt, Alexander von: Visit to Guanajuato, Mexico (1803) 128 *Dec*
Hunt, Chet **123** *Sep*
Hunter, Nigel 63 *Dec*
Hurwitz, Charles 122 *Sep*
Hydrocarbon fuels: ***Inventor Makes Fuel to Challenge Gasoline.*** Earth Almanac. *Nov*
Hydrothermal vents: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Hynes, Robert: Paintings by **18-19, 26-27** *Jul*
Hyslop, Prince **76** *Aug*

I

INS *see* U. S. Immigration and Naturalization Service
"I Have a Dream" program 66 *Sep*
Iapetus (Saturnian moon) 55, **62,** 62-63 *Aug*
Ibis **30-31** *Dec*
Ice core studies: Carbon dioxide levels 72-73, 75 *Oct*
Icebreakers: Northwest Passage **6-7, 11,** 20, 23, 31 *Aug*
Iceland: ***Witnessing Creation on the "Newest Island."*** Geographica. *Oct*
Idaho: Salmon tracking **32-33** *Jul*
Idizol, Angèlà Novànyòn **76** *Aug;* Altar erected by **74-75** *Aug*
Ieyasu, Shogun *see* Tokugawa Ieyasu
Iglehart, Alice 100, **119,** 121 *Dec*
'Iiwi **82** *Jul*
Ike's Airplane Returns to the Skies. Geographica. *Nov*
Iliamna remota **129** *Aug*
IMAX films: ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep*
Immigrants: Erie Canal transportation and settlement 45, 48, 55, 56 *Nov*
Immigrants, illegal: United States 104-105 *Sep;* World War II 95 *Sep*
Immigration: United States: ***Immigration Today: New York's New Immigrants.*** By Alice J. Hall. 103-105, *Sep; **New Life for Ellis Island.*** By Alice J. Hall. 89-101, *Sep*
Impalas **2-4, 26-27, 32-33,** 43 *Dec*
In an Empty Region, a Series of Surprises. Geographica. *Aug*
In Least Auklet Society, Color Matters Most. Geographica. *Nov*
Independence Hall, Philadelphia, Pa. **107** *Dec;* Peale Museum 106, 113 *Dec*
India: Emigrants 103 *Sep;* Gem trade 43, 60, 61, 64, emerald chips **57,** gem cutting **56** *Jul; **India's Giant Water Project Continues.*** Earth Almanac. *Sep;* Manila galleon trade 12, 14, 35 *Sep*
Indians of North America *see* Iroquois Confederacy; Pacific Northwest Indians; Sioux Indians
Indonesia *see* East Indies
Indris. *Africa Threatened* map supplement. *Dec*
Industrial revolution: Importance of Troy, N. Y. 43 *Nov*
Inger, David 96 *Dec*
Insect control: **Glasnost *Produces a Death Ray for Locusts.*** Earth Almanac. *Oct;* Mosquitoes 128, **129,** 130 *Jul;* Tsetse-fly eradication efforts **64,** 65 *Dec*
Insects: Number of species 138 *Oct;* Old-growth forest insects **119** *Sep;* Rain forest species 138, collection **138** *Oct; see also* Lice
International Boxing Federation: Light heavyweight champion **77** *Sep*
International Geosphere-Biosphere Programme (IGBP) 98 *Oct*
International Trans-Antarctica Expedition: ***Six Across Antarctica: Into the Teeth of the Ice.*** By Will Steger. 67-95, *Nov*
Campsite **73-74**
Cost 75
Diet 76, 80, 81, 86
Distance traversed 67, 68, 69, 92
Duration 68, 69, 75, 92
Map 69
Medical examinations **80,** 85
Purpose of mission 75, 76-77
Resupply **77,** 78, 84, 89, 90
Search and rescue mission 68, **90, 91**
Intramuros (quarter), Manila, Philippines 14 *Sep;* Antique map **22** *Sep;* Church **15** *Sep*
Introduced species *see* Wildlife introduction
Inuit: ***Changing Images of the Northwest Passage.*** By John Bockstoce. 2-33, *Aug*
Inuit Circumpolar Conferences 32-33 *Aug*
Inventor Makes Fuel to Challenge Gasoline. Earth Almanac. *Nov*
Invertebrates: ***In an Empty Region, a Series of Surprises.*** Geographica. *Aug*
Io (Jovian moon) **50** *Aug;* Volcanoes 47, 50, 54, 65, **65** *Aug*
Iran: Crown jewels **40-41,** 51, **58** *Jul*
Irapuato, Mexico: Presidential visit **133** *Dec*
Iraq: Invasion of Kuwait (1990): ***Kuwait: An Economic Oasis Watered by Oil.*** Geographica. *Nov; see also* Babylonia
Ireland, Republic of: ***A National Park on Great Blasket.*** Geographica. *Sep*
Ireli, Mali 108 *Oct*
Iroquois Confederacy: Dissolution (1776) 43 *Nov*
Irrigation: ***Buried "Marshmallows" Save Irrigation Water.*** Earth Almanac. *Aug*
Irvine, Tony **133** *Oct*
Is Our World Warming? By Samuel W. Matthews. 66-99, *Oct*
Is This an Auto Shop Or a Dentist's Office? Earth Almanac. *Nov*
Is This the Source of Bronze Age Tin? Geographica. *Oct*
Isaac, James **54** *Aug*
Isaacs, Stephen 80 *Sep*
Isis (Egyptian goddess): Gold pectoral **115-117** *Nov;* Tomb painting **113** *Nov*
Iskra Telekom, Slovenia, Yugoslavia **119** *Aug*
Islam: Dogon 108, 126 *Oct;* Yugoslavia 117 *Aug*
Israel: Emerald-cutting industry 43, 60-61, robotics **57** *Jul; **It's a "Lousy" Job, but Science Has to Do It.*** Geographica. *Aug*
Issa *see* Vis
Istrian Peninsula, Yugoslavia: Naturist camp **112-113** *Aug*
Itabira, Minas Gerais (state), Brazil: Emerald mining near **68-69** *Jul*
Italiano, Giuseppe Santi 90 *Sep*
Italy: Environmental record. Editor's Page. *Oct; **Theft at Herculaneum: 280 Artifacts Stolen.*** Geographica. *Jul*
It's a "Lousy" Job, but Science Has to Do It. Geographica. *Aug*
Ivans, Dainis **17** *Nov*
Ivory carvings: Christ **35** *Sep;* Madonna **34** *Sep*
Ivory trade: Botswana 53, 56, **57** *Dec; **Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov*
Izu Peninsula, Japan 2, 9 *Oct*

J

Jack, Darrell **2** *Jul*
Jalapa, Mexico: Seventeenth-century trade fair 36 *Sep*
Jamaica: Emigrants 103 *Sep*
James Ross Strait, Northwest Territories, Canada **8** *Aug*
Jane Goodall at Gombe: a 30th Anniversary. Geographica. *Aug*
Japan: Consumption of U. S. timber 124, 129 *Sep;* Environmental record. Editor's Page. *Oct; **Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul;* Manila galleon trade 13, 14, 21, 24 *Sep; **Suruga Bay: In the Shadow of Mount Fuji.*** By David Doubilet and Eugenie Clark. 2-39, *Oct*

Jara, María de la: Suicide 35 *Sep*
Jars: Ming porcelain **47** *Sep;* Seventeenth-century storage jars 43, **45,** 50-51 *Sep*
Jason project: ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug*
Jatun Sacha biological station, Ecuador 126, 130, 131 *Aug*
Jay-Alexander, Richard **72** *Sep*
Jebel Barkal *see* Barkal, Jebel
Jefferson, Thomas: Friendship with Charles Willson Peale 101, 110, 112, 113, 116 *Dec;* Opinion of proposed Erie Canal 39, 44 *Nov;* Portrait by Charles Willson Peale **112** *Dec*
Jenkins, Brian. President's Page. *Sep*
Jenkins, Carol: ***A New Guinea People Battles for Survival.*** Geographica. *Jul*
Jentink's duikers. *Africa Threatened* map supplement. *Dec*
Jermann, Tom 127 *Sep*
Jerome Robbins' Broadway (musical) **58-59,** 73, 75 *Sep*
Jervis, Verne 105 *Sep*
Jesus: Ivory-carving depiction **35** *Sep*
Jet Propulsion Laboratory, California Institute of Technology: ***Neptune: Voyager's Last Picture Show.*** By Rick Gore. 35-47, *Aug;* ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Jewelry: ***Emeralds.*** By Fred Ward. 38-69, *Jul;* Kushite earrings **98** *Nov;* **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep;* Tellem **111** *Oct*
Jews, Milton Oliver **85** *Aug*
Jews: Soviet refugees **102** *Sep*
Johansson, Sven 6, 7 *Aug*
John, Ralph 132 *Sep*
John F. Kennedy International Airport, New York, N. Y.: Immigrants **102,** weekly arrivals 103 *Sep*
John Pennekamp Coral Reef State Park, Fla.: ***Florida's Coral Reefs Are Imperiled.*** By Fred Ward. 115-132, *Jul*
Johnson, Ali 65 *Sep*
Johnson, Ryan "R Rock" **73** *Aug*
Johnson-Reed Act (1924) 103-104 *Sep*
Jones, Gareth: ***Children Pay for Corrupted Environment.*** Earth Almanac. *Dec*
Jones, Grant D.: ***An Eyewitness View of a Maya Ruler.*** Geographica. *Oct;* ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Jones, Gregg 24 *Jul*
Jones, Ian L.: ***In Least Auklet Society, Color Matters Most.*** Geographica. *Nov*
Jones, Paul Tudor, II 65-67, **75** *Sep*
Joubert, Beverly and Dereck 49 *Dec*
Joulin, Guy **134-135** *Oct*
Juárez, Benito 124-125 *Dec;* Warfare against Emperor Maximilian 132 *Dec*
Juilliard School, New York, N. Y. 76 *Sep;* Dance studio **71** *Sep*
Jupiter (planet): ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Jupiter, Fla.: Water supply 109 *Jul*
Jūrmala, Latvia: Pollution 10 *Nov*
Jwaneng diamond mine, Botswana 75, 76, **76** *Dec*

K

K-T boundary event: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct*
KGB (Committee for State Security): Agent **11** *Nov;* Estonia 10 *Nov*
Kaarman, Elda **31** *Nov*
Kachikau, Botswana: Village chief 53 *Dec*
Kagem emerald mine, Zambia **42-43,** 59 *Jul*
Kalahari Desert, Botswana 75-76, 83 *Dec; see also* Okavango Delta
Kalanga tribespeople **94-95** *Dec*
Kalemegdan park, Belgrade, Yugoslavia **111** *Aug*
Kalev Stadium, Tallinn, Estonia: Song and dance festival **30-31** *Nov*
Kama, Kaido 22 *Nov*
Kamane, Jimmy 91, 93 *Dec*
Kamniške Mountains, Yugoslavia **94-95** *Aug*
Kamotja, Njemah, II 82 *Dec*
Kani Kombolé, Mali: Mosque **126** *Oct*
Kanye, Botswana: Education enterprise 96 *Dec*
Kasane, Botswana: Safari **52** *Dec*
Katabatic winds: Antarctica 80 *Nov*
Kauai (island), Hawaii: Age 72 *Jul*
Kaunas, Lithuania: Cathedral **32** *Nov*
Kaunda, Francis 59-60 *Jul*
Kawana, Koichi: Garden design **134-135** *Aug*
Kayano, Shigeru **25** *Jul*
Keakopa, Sebueng 96 *Dec*
Keeling, Charles David 72 *Oct*
Keller, Gerta: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct*
Keller, Peter C. 51 *Jul*
Keller, Roland **137** *Oct*
Kelly, Michael J.: ***A Ban on Imports of Sipán's Treasures.*** Geographica. *Nov*
Kendall, Timothy, author: ***Kingdom of Kush.*** 96-125, *Nov*
Kenmore museum, Fredricksburg, Va. 121 *Dec*
Kentucky Educational Foundation: ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep*
Kenya: ***Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov*
Kerde, Üllar 13 *Nov*
Key Largo, Fla.: Development 127, **128-129** *Jul;* Map 124 *Jul;* Mosquito control 128, **129,** 130 *Jul*
Key Largo National Marine Sanctuary, Fla.: ***Florida's Coral Reefs Are Imperiled.*** By Fred Ward. 115-132, *Jul*
Key West, Fla.: Landfill 109 *Jul;* Sewage-treatment facility 127 *Jul;* Water supply 108-109 *Jul*
Kgale, Botswana: College student **92** *Dec*
kgotla 71, 85 *Dec*
Khama, Ian 49, **82** *Dec*
Khama, Ruth **82** *Dec*
Khama, Sir Seretse 49, 82, 85, 91 *Dec;* Portrait **82** *Dec*
Kiefer, Russell **33** *Jul*
Kilauea Iki volcano, Hawaii 74, **75** *Jul*
Kilauea volcano, Hawaii: ***Hawaii's Volcanic Cradle of Life.*** By William H. Amos. 70-87, *Jul*
Kimberley (region), Australia: ***In an Empty Region, a Series of Surprises.*** Geographica. *Aug*
Kimberlite 76 *Dec*
King salmon *see* Chinook salmon
King William Island, Northwest Territories, Canada **9,** 31, 33 *Aug*
Kingdom of Kush. By Timothy Kendall. 96-125, *Nov*
Kipahulu forest, Maui, Hawaii **86** *Jul*
kīpuka **77, 83** *Jul*
Kirkilas, Gediminas 30 *Nov*
Kirkmire, Nick 134 *Sep*
Kirschenbaum and Bond, New York, N. Y. 70 *Sep*
Kirtland's warblers: Painting **86** *Oct;* Range map 87 *Oct;* Threat to habitat 86 *Oct*
Kissimmee River, Fla. 94, 100, 103 *Jul;* Channelization 90, 96, **96,** 105 *Jul;* Pollution control project **98,** 108 *Jul;* Restoration 96, 108, experimental flooding of oxbows **96,** 106, 108 *Jul*
Kiwanis Clubs: Geography education support. President's Page. *Dec*
Kleiman, Devra: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Klein, Christopher A.: Diagram by **62** *Aug;* Paintings by **12-13** *Sep,* **11** *Oct*
Klein, Murray 76 *Sep*
Kocijančič, Janez 121-122 *Aug*
Koehler, Bart 129, 132 *Sep*
Kohlhase, Charles E. **54** *Aug*
Kohtla-Järve, Estonia: Pollution 18, 21 *Nov*
Koko (gorilla): ***Koko at Play Outdoors: She Needs Her Space.*** Geographica. *Nov*
Komangapik, Mikiseetee **3** *Aug*
Konstantinou, Nikolas 21, 24 *Oct*
Koonoo, Joe **18, 19** *Aug*
Koonook, Luke 31, 32 *Aug*
Korea, South: Emigrants 103 *Sep*
Kornati archipelago, Croatia, Yugoslavia **106** *Aug*
Kosovo Polje, Battle of (1389) 100 *Aug*
Kosovo Province, Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
Kotor, Montenegro, Yugoslavia **107** *Aug*
Koversada, Camp, Istrian Peninsula, Yugoslavia: Founders' day celebration **112-113** *Aug*
Kragujevac, Serbia, Yugoslavia: Auto assembly line **119** *Aug*
Kramberger, Ivan **120** *Aug*
Krasauskas, Povilas, Veronika, and Kestutis 34-35 *Nov*
Krimigis, S. M. **54** *Aug*
Kristof, Emory, photographer: ***Suruga Bay: In the Shadow of Mount Fuji.*** 2-39, *Oct*
Kross, Jaan 13 *Nov*
Krško, Slovenia, Yugoslavia: Antinuclear demonstration **120-121** *Aug*
Kučan, Milan 120, 122-123 *Aug*
Kudzu: ***Scourge of the South May Be Heading North.*** Geographica. *Jul*
Kujala, Stan 132 *Sep*
Kuke Fence, Botswana 61, 63 *Dec*
Kulluk (offshore drilling vessel) **6** *Aug*

Kunda, Estonia: Pollution **29** *Nov*
Kuroshio current, Pacific Ocean 9 *Sep*, 8, 36 *Oct*
Kush, Kingdom of: ***Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov*
Kuwait: An Economic Oasis Watered by Oil. Geographica. *Nov*
Kuzmina, Viktoria **33** *Nov*
Kyuquot, Vancouver Island, British Columbia: Logging damages 132 *Sep*

L

Laar, Mart 14 *Nov*
Labitzke, Karin: Sunspot-climate theory 91 *Oct*
Ladies Mile, New York, N. Y. 69-70 *Sep*
Lady Bird Johnson Grove, Redwood National Park, Calif. **130-131** *Sep*
Laetoli (region), Tanzania: ***Footprints on the Trail of the Earliest Humans.*** Geographica. *Oct*
Lafayette, Marquis de 116 *Dec;* Pheasants given to George Washington 101-102, **106** *Dec*
Lafayette, La.: Cajuns 44, 57, 58 *Oct*
Lake Baykal's Deep Vent: A Freshwater First. Geographica. *Dec*
Lake Okeechobee Technical Committee 99 *Jul*
Lamanai, Belize: ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Lamprey, sea: Destruction of Great Lakes fisheries 47 *Nov*
Land and Water Conservation Fund. President's Page. *Jul*
Land use: ***Homes for Wildlife in Unexpected Places.*** Earth Almanac. *Jul;* ***South Florida Water: Paying the Price.*** By Nicole Duplaix. 89-113, *Jul;* ***Yosemite: 100 Years Later.*** By Gilbert M. Grosvenor. President's Page. *Oct*
Landfills: Contaminating leakage 94, 109 *Jul;* Dade County, Fla. **95** *Jul*
Landry, Richard 53 *Oct*
Landsbergis, Vytautas **17** *Nov;* Lithuanian presidency 30, 36 *Nov*
Lane, Arthur L. **54** *Aug*
Lantern sharks **13** *Oct*
Lanting, Frans, author-photographer: ***A Gathering of Waters and Wildlife.*** 5-37, *Dec;* photographer: ***Okavango Delta: Old Africa's Last Refuge.*** 38-69, *Dec;* On Assignment. *Dec*
La Parroquia, San Miguel de Allende, Mexico: Facade 136 *Dec*
Lapointe, Brian 130, 131-132 *Jul*
Larsen, Henry: Northwest Passage transits 13, 22 *Aug*
LaRuex, Marcus. President's Page. *Dec*
La Salle University, Philadelphia, Pa.: President's residence 114 *Dec*
Lasers: **Glasnost** ***Produces a Death Ray for Locusts.*** Earth Almanac. *Oct*
Las Torres, Guanajuato, Mexico: Silver mine tunnel **137** *Dec*
Latvia: ***The Baltic Nations.*** By Priit J. Vesilind. 2-37, *Nov;* ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul*
Latvia Popular Front: Offices 26-27 *Nov*
Lava: *'a'ā* lava 74, **74, 83** *Jul; pāhoehoe* lava 74, **74, 83** *Jul;* Plant colonization **74, 75, 76** *Jul;* Tube **71** *Jul*
Lavender farms: Yugoslavia 113 *Aug*
Lazar Hrebeljanović, Prince of Serbs 100 *Aug*
Leach, Paul: ***Sharks: Predators That Need Our Protection.*** Earth Almanac. *Dec*
Lead poisoning: ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep*
Leafhoppers: Hawaii **81, 86** *Jul*
Leakey, Richard. President's Page. *Nov*
Least auklets: ***In Least Auklet Society, Color Matters Most.*** Geographica. *Nov*
Leatherman, Stephen 77 *Oct*
Ledda, Jeff 15 *Oct*
Lee, Douglas B., author: ***Okavango Delta: Old Africa's Last Refuge.*** 38-69, *Dec*
Leeville, La.: Seafood dock worker **54** *Oct*
Legault, Leonard 22-23 *Aug*
Legazpi, Miguel López de: Discovery of the trans-Pacific route 9, 12 *Sep*
Lehman, Danny, photographer: ***Mexico's Bajío—The Heartland.*** 122-143, *Dec*
Lehmann, John 135 *Aug*
Leishmaniasis 138 *Oct*
Lejeune, Iry 56 *Oct*
Lemurs, hairy-eared dwarf: ***Finding a Tiny Lemur Is No Easy Task.*** Geographica. *Sep*
Lentini, Joe 113 *Oct*
León, Mexico: Growth 142 *Dec;* Handmade shoes **136** *Dec*
Lerma, Río, Mexico: Pollution 142 *Dec*
Les Misérables (musical): Rehearsal **72** *Sep*
Letokhov, Vladilen S.: **Glasnost** ***Produces a Death Ray for Locusts.*** Earth Almanac. *Oct*
Lewis, Barry 67 *Sep*
Lewis, Fielding, Jr.: Portrait **120** *Dec*
Leyte Gulf, Philippines: World War II naval battle 24 *Sep*
Lice: ***It's a "Lousy" Job, but Science Has to Do It.*** Geographica. *Aug*
Liddicoat, Richard 48 *Jul*
Liepāja, Latvia: Steelworks **26-27** *Nov*
A Lifelong Commitment to Conservation. By Gilbert M. Grosvenor. President's Page. *Jul*
Lighthawk (pilots' group): ***Pilots Help Preserve Belize Wilderness.*** Earth Almanac. *Oct*
Lightning detection program, U. S.: ***Detecting Lightning's Early Warning Signals.*** Geographica. *Oct*
Lilies, water: Botswana **29, 42** *Dec*
Lilly Endowment. President's Page. *Sep*
Limnology: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Lin Tao Kien 16 *Sep*
Linchwe II (Bakgatla chief) 85, 91 *Dec*
Lincoln Center, New York, N. Y. 71, 76 *Sep*
Lindmania holstii **129** *Aug*
Lindstrom, Bernadette 64 *Dec*
Lionfish **24-25,** ***cover.*** *Oct*
Lions **34-35,** 43, 45, 58 *Dec*
Lip ring: Dogon woman **114** *Oct*
Liphuko, Seeiso 88 *Dec*
Lippmaa, Jaak 23 *Nov*
Lithuania: ***The Baltic Nations.*** By Priit J. Vesilind. 2-37, *Nov*
Little Falls, N. Y.: Erie Canal 45 *Nov*
Litton, Martin 112, 113 *Sep*
Lizard fish **30** *Oct;* Tripod lizard fish **22** *Oct*
Lizards *see* Chameleons
Ljubljana, Slovenia, Yugoslavia 121 *Aug;* Electronics factory **119** *Aug*
Lloyd's Camp, Chobe National Park, Botswana 45 *Dec*
loa (voodoo saints) 75, 76-77 *Aug*
Lobelias: Hawaii **81** *Jul*
Lockheed C-121A Constellations: ***Ike's Airplane Returns to the Skies.*** Geographica. *Nov*
Lockport, N. Y.: Barges **64-65** *Nov;* Engraving of Erie Canal (1838) **44** *Nov;* Locks 44, 65 *Nov*
Locusts: **Glasnost** ***Produces a Death Ray for Locusts.*** Earth Almanac. *Oct*
Loeto, Thatayaone **90** *Dec*
Logging *see* Lumber industry
Loincloths: Filipino natives **20, 21** *Sep*
lomas: ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul*
London Missionary Society: Involvement in Bechuanaland Protectorate 82 *Dec*
Long, Stephen H.: Western expedition 116 *Dec*
Long Journey of the Pacific Salmon. By Jere Van Dyk. 3-37, *Jul*
"lookbox" fishermen 36, **37** *Oct*
Lopatin, Igor 21 *Nov*
Lorenz, Edward 82 *Oct*
Los Padres National Forest, Calif.: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct*
Louisiana: ***The Cajuns: Still Loving Life.*** By Griffin Smith, Jr. 40-65, *Oct;* Sea level change, projected 77 *Oct*
Lowney, Denise **82** *Aug*
Lowry, Pete 138 *Aug*
Loxahatchee National Wildlife Refuge, Fla.: Agricultural pollutants 104, 105 *Jul;* Endangered status 105 *Jul*
Lumber industry: ***Old-Growth Forests: The Good News and the Bad.*** By William Graves. Editor's Page. *Sep;* ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Lusaka, Zambia: ***Students in Zambia Look for Acid Rain.*** By Gilbert M. Grosvenor. President's Page. *Sep*
Lutheran Church: Estonia 12, 32, 35 *Nov;* Latvia 12, 32, 35 *Nov*
Lyall, Ernie 33 *Aug*
Lyndhurst estate, Westchester County, N. Y. **84** *Sep*
Lyon, Eugene, author: ***Track of the Manila Galleons.*** 5-37, *Sep*
Lyons, N. Y.: Erie Canal **62, 63** *Nov*

M

MKS Steelworks, Serbia, Yugoslavia **118-119** *Aug*
Maat (Egyptian goddess): Malachite figurine **115-116** *Nov*
Mabgwe family 93-94 *Dec*

McAllister, Peter 132 *Sep*
Macaques, Barbary. *Africa Threatened* map supplement. *Dec*
McCloskey, Mike 114 *Sep*
McCollough, Walter **80** *Aug*
McCurry, Steve, photographer: ***Yugoslavia: A House Much Divided.*** 92-123, *Aug;* On Assignment. *Aug*
McDonald, Julie 114 *Sep*
Macedonia (republic), Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
McGinnis, Robert E., artist: ***Track of the Manila Galleons.*** 5-37, *Sep*
McGlathery, Patty: Marriage to Raphaelle Peale 114 *Dec*
McGregory, Jerrilyn 70 *Aug*
McIntosh, Robin. President's Page. *Nov*
McMicheaux, Vashti 76, 77, 80 *Sep*
MacMillan Bloedel 132, 133 *Sep*
McNair, Mary **79** *Aug*
McNally, Joe, photographer: ***New Life for Ellis Island.*** 89-101, *Sep*
McNeely, Anna **72** *Sep*
McNeil, William 29 *Jul*
MacVicar, Tom 101, 112 *Jul*
Madagascar: Deforestation 128, **130** *Aug;* Emerald mining 54, 55 *Jul;* ***Finding a Tiny Lemur Is No Easy Task.*** Geographica. *Sep;* National park 140 *Aug;* Plants **128,** species diversity 128, 140 *Aug*
Madawaska region, Me.: Acadians 56, 58 *Oct*
Madden, Mike: ***Underground Glories of the Yucatán.*** Geographica. *Sep*
Magailanes (galleon) 8 *Sep*
Maganu, Edward 79 *Dec*
Magdalena de Araceo, Mexico: Corn shocks **130-131** *Dec*
Magellan, Ferdinand: Philippines 8, 12 *Sep*
Magwamba, Cephas 75 *Dec*
Mahan, Lorraine **84** *Aug*
Mahlman, Jerry 78 *Oct*
Mahogany, Río Palenque 131 *Aug*
Main Building, Ellis Island, New York, N. Y. **88-91, 98, 99** *Sep;* Cutaway painting **93** *Sep;* Restoration **89,** 92, **98,** 100 *Sep*
Maine: Acadians 56, 58 *Oct;* ***Restoring the Library of Peary's Island Home.*** Geographica. *Jul*
Makah Indians: Salmon-fishing rights 36 *Jul*
Makgadikgadi Pans (region), Botswana: Aerial view **20-21** *Dec;* Ostrich **36-37** *Dec;* Stone artifacts 67 *Dec;* Water source 42, 46 *Dec*
Makola, Gosetsemang 81, 82 *Dec*
Malaqaye, Queen (Kush): Silver mask **112** *Nov;* Tomb 114 *Nov*
Mali: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct*
Malinauskas, Angele 34 *Nov*
mãmane **82-83, 85** *Jul*
Mambazo, Lovemore **97** *Dec*
"mammoth" (mastodon): Exhibition 111 *Dec;* Fads inspired by 111-112 *Dec*
Mamou, La.: Dance hall **51** *Oct;* Mardi Gras revelers **52-53** *Oct*
Manabe, Syukuro 78, **80** *Oct*
Mangyans **20, 21** *Sep;* Ancient script **21** *Sep*
Manhattan (borough), New York, N. Y.: ***Broadway, Street of Dreams.*** By Rick Gore. 57-87, *Sep; New York City; Manhattan,* Special Places of the World map series supplement. *Sep;* Skyline **54-56** *Sep*
Manhattan (icebreaker): Northwest Passage 20 *Aug*
Manila, Philippines: ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Artisans 11
Churches **15, 17**
Entrepôt 11, 12, 36-37
Ethnic groups 23; Chinese 16-17; Spaniards 16, 18, 23
Founding (1571) 11, 12
Harbor 11
Walled quarter (Intramuros) 14, 23; Antique map **22**
Manila galleon trade:
Nuestra Señora de la Concepción. By William M. Mathers. 39-53, *Sep*
Track of the Manila Galleons. By Eugene Lyon. 5-37, *Sep*
Cargoes 11, 12-13, **13,** 14, 16, 30, **35,** 40, 43; Chinoiserie 14, 30, **34;** Silver 12, 16, 30, **32,** 36
Contraband 13, 18, 21, 28, 35-36, 43, 45
Eastbound passage 28, 32, 34; Duration 8, 9, 30; Hardships 11, 34-35; Landfall **26-27,** 35
Economic impact of failed voyages 4, 17, 18
Era 4, 44; Decline of trade 13, 17; Last voyage 8
Frequency of voyages 4, 28, 32
Harassment by competitors 21; British naval strikes 22, 23, 24, 25, 28
Investors 17-18
Map of trade routes 12-13
Origins of trade 11
Rations 18, 23, 33-34; Water supply 34, 51
Regulation of trade 17, 18
Routes 12, 32-33, 35; Discovery 8-9, 11
Shipboard population 33
Ships 17; Builders 28, 30; Rigging 18, 28; Size 18, 21, 44
Trade fairs **30,** 35, 36
Westbound passage 8, 28, 36
Map projections 132-133 *Nov*
Map supplements:
Africa; Africa Threatened. Dec
New York City; Manhattan, Special Places of the World series. *Sep*
The Solar System, Our Sun's Family. Aug
Mapmaking: ***Seventy-Five Years of Cartography: A Love Affair With Maps.*** By John B. Garver, Jr. 130-134, *Nov*
Maps:
Africa; Africa Threatened, supplement. *Dec*
Antarctica: Traverses (1989-1990) 69, 94 *Nov*
Balkan Peninsula (1350-1914) 104-105 *Aug*
Baltic States 12 *Nov;* Evolution (1400-1938) 13 *Nov*
Botswana 83 *Dec;* Okavango Delta 47 *Dec*
Canada *see* Northwest Passage
Caribbean Sea: Coral reefs 124-125 *Jul*
Egypt and Nubia 102 *Nov*
El Bajío (region), Mexico 128 *Dec*
Erie Canal, N. Y. 44-45 *Nov*
Florida: Key Largo 124 *Jul;* Watershed 100-101 *Jul*
Hawaiian islands: Tectonic origins 72 *Jul*
India: Narmada River: ***India's Giant Water Project Continues.*** Earth Almanac. *Sep*
Japan: Suruga Bay 5-7 *Oct*
Key Largo, Fla. 124 *Jul*
Kushite empire: Egypt and Nubia 102 *Nov*
Louisiana: Acadian settlement (1760-1990) 45 *Oct*
Mali: Bandiagara escarpment 109 *Oct*
Mariana Islands: Saipan, showing wreck site of the *Concepción* 40-41 *Sep*
Mexico: El Bajío region 128 *Dec;* New Spain trade routes 13 *Sep*
Mexico, Gulf of: Coral reefs 124 *Jul*
New Spain (Mexico): Overland trade routes 13 *Sep*
New York: Erie Canal 44-45 *Nov;* New York Bay 90 *Sep; New York City; Manhattan,* Special Places of the World series supplement. *Sep*
Nile River, Africa 102 *Nov*
North America: Climate models 82 *Oct;* European colonization (1755-1785) 45 *Oct;* Pacific coast forests 120-121 *Sep;* Ranges of American beech and sugar maple 86-87 *Oct*
Northwest Passage 10-11 *Aug;* ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep*
Okavango Delta, Botswana 47 *Dec*
Pacific Ocean: Salmon migration routes 18-19 *Jul;* Trade routes, 17th-century 12-13 *Sep*
Philippines: Trade and exploration routes 12 *Sep*
The Solar System, Our Sun's Family, supplement. *Aug*
United States: Range of kudzu vine. ***Scourge of the South May Be Heading North.*** Geographica. *Jul;* Virgin woodlands (1620-1990) 120 *Sep*
World: Climate models 83 *Oct;* Emerald-mining countries 54 *Jul;* Missouri Botanical Garden projects 129 *Aug*
Yugoslavia 104-105 *Aug*
Maps, antique: Cape Mendocino, Calif. **27** *Sep;* Manila, Philippines **22** *Sep*
Marbled murrelet **119** *Sep*
Marcello, Jody. President's Page. *Dec*
Marcus, Curt 67, 69 *Sep*
Mardi Gras revelers: Mamou, La. **52-53** *Oct*
Mardikian, George 95 *Sep*
Mariachis: San Miguel de Allende, Mexico **138** *Dec*
Mariana Islands *see* Saipan
Marine biology: ***Suruga Bay: In the Shadow of Mount Fuji.*** By David Doubilet and Eugenie Clark. 2-39, *Oct;* ***Whale Migrations: Mother (Nature) Calls.*** Geographica. *Dec*

Mariner Jupiter/Saturn (MJS) 52-53, 54 *Aug*
Maritime Provinces, Canada: Acadians 56-58 *Oct*
Marković, Ante 110 *Aug*
Mars: ***Solar Sails Will Power Ships to a New World.*** Earth Almanac. *Sep*
Marshall, Arthur R.: Plea for restoration of the Everglades 96 *Jul*
Marshall, David 111 *Sep*
Martin, Rudy 69 *Sep*
Martinez, Bob 105 *Jul*
Masco, Kaye 127 *Sep*
Maser, Chris 136 *Sep*
Masire, Quett K. J. 49, 77, 85 *Dec*
Mass Extinctions: Not by Meteorite Alone? Geographica. *Oct*
"Mass for Pentecost Sunday" (Landry) 53 *Oct*
Massachusetts General Hospital, Boston, Mass.: Egyptian mummy **117** *Dec*
Masten, John: Excavation of farm 110-111, painting **109** *Dec*
Mastodon: Skeleton **108,** 110-111, painting of excavation **109** *Dec*
Matenge, Gobe 78 *Dec*
Mathe, Ben 95-96 *Dec*
Mathers, William M., author: **Nuestra Señora de la Concepción.** 39-53, *Sep*
Matsui, Tadahiko 9, 24 *Oct*
Matthews, Samuel W., author: ***Is Our World Warming?*** 66-99, *Oct*
Maui (island), Hawaii: Gunnera plant **87** *Jul;* Silverswords **84** *Jul*
Maun, Botswana 64, 96 *Dec;* Aerial view **52** *Dec;* Dam and dredging proposals 63-64 *Dec;* Drought 60 *Dec;* Ivory 53, **57** *Dec;* Tourist industry 52, 64 *Dec*
Mauna Loa Observatory, Hawaii: Carbon dioxide measurement 72, graph **73** *Oct;* Occulting telescope 72 *Oct*
Maunder Minimum 88 *Oct*
Mavro Vetranic (cargo ship) 124 *Jul*
Mawson, Douglas 84-85 *Nov*
Maximilian, Emperor (Mexico): Appointment to Mexican throne 132, execution 132 *Dec*
Maya: ***An Eyewitness View of a Maya Ruler.*** Geographica. *Oct;* ***Oldest Known Maya: Not Quite So Old.*** Geographica. *Nov;* ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Mbengwa, Ikgopoleng **97** *Dec*
Mbukushu tribe: Baskets **48,** fishing baskets **48-49** *Dec;* Mother and child **38-39** *Dec*
Mead, Ralph. President's Page. *Dec*
Mech, David: ***Wolves in Study Shot, Killed in Minnesota.*** Geographica. *Oct*
Medicine and health: ***Children Pay for Corrupted Environment.*** Earth Almanac. *Dec*
Medicines, prescription: Plant derivatives 126 *Aug*
Medina, N. Y.: Erie Canal **38-39** *Nov*
Medinet Habu (site), Thebes, Egypt: Tile **103** *Nov*
Medjugorje, Yugoslavia: Virgin Mary sightings 117, 121 *Aug*
Megasoma actaeon **138** *Oct*
Meier, Bernhard: ***Finding a Tiny Lemur Is No Easy Task.*** Geographica. *Sep*
Mekong Delta, Vietnam: ***Fighting to Help Cranes in the Mekong Delta.*** Geographica. *Dec*
Melander, Alf 98 *Sep*
Melanin: Skin cancer research 91 *Oct*
Melville, Herman: Opinion of Erie Canal 39 *Nov*
Menard, D. L. 44 *Oct*
Menard, Hank **49** *Oct*
Mendocino, Cape, Calif.: Antique map **27** *Sep;* Manila galleons 27, 35 *Sep*
Mendoza, Argentina: ***Greening of an Argentine City, a Century Old.*** Earth Almanac. *Aug*
Mercury: Chinese trade item 16 *Sep*
Meri, Lennart 10 *Nov*
"Mermaids, Mummies, and Mastodons" (exhibit) 102 *Dec*
Meroë (ancient city), Kush 105 *Nov*
Messner, Reinhold 76, 94, 95, **95** *Nov;* Editor's Page. *Nov*
Mestizos: Social status in New Spain 129 *Dec*
Metasequoia 140 *Aug*
Metcalf, K. J. 132 *Sep*
Meteorites: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct*
Methane 72, 75, 79, 80-81 *Oct;* Atmospheric levels, increase in 79, graph **78** *Oct;* Sources **76,** 77, 79, 81, 87, 95 *Oct*
Methyl isocyanate leaks: Bhopal, India 63 *Nov;* Middleport, N. Y. 63 *Nov*
Mexican wolves: ***Can El Lobo Make a Comeback?*** Earth Almanac. *Sep*
Mexico: ***Ash from a Volcano: It May Remain Aloft.*** Geographica. *Nov;* Emigrants 104 *Sep;* ***Mexico's Bajío—The Heartland.*** By Charles E. Cobb, Jr. 122-143, *Dec;* ***A Monarch Butterfly Population Explosion.*** Geographica. *Aug;* ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep;* ***Underground Glories of the Yucatán.*** Geographica. *Sep*
Mexico, Gulf of: Map showing oil and gas fields 124-125 *Jul*
Miami, Fla. **92** *Jul;* Water usage restrictions (1989) 103-104 *Jul*
Middle East: ***Kuwait: An Economic Oasis Watered by Oil.*** Geographica. *Nov; see also* Babylonia; Egypt
Middleport, N. Y.: Erie Canal **40-41** *Nov;* Pollution 63, 64 *Nov;* Roosevelt campaign stop (1930) 63 *Nov;* Toxic gas leak (1984) 63 *Nov*
Migration: ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul;* ***A Monarch Butterfly Population Explosion.*** Geographica. *Aug;* ***Whale Migrations: Mother (Nature) Calls.*** Geographica. *Dec*
Migratory Songbird Decline 1978-1987. Earth Almanac. *Oct*
Mijangos Borja, Octavio 142 *Dec*
Miller, Jim **128** *Aug*
Miller, John. President's Page. *Sep*
Miller, Lillian B. 120-121 *Dec*
Millet farming: Dogon 102-103, 106, 119, granaries **108, 119,** threshing **113** *Oct*
Milošević, Slobodan 106 *Aug*
Mimas (Saturnian moon) 62, **62** *Aug*
Mimbres culture: ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec*
Minas Basin, Nova Scotia, Canada: Acadians 50 *Oct*
Mindoro Island, Philippines: Mangyans **20, 21** *Sep;* Trade with China 21 *Sep*
Miner, Ellis D. **54** *Aug*
Mines and mining: ***Emeralds.*** By Fred Ward. 38-69, *Jul; see also* Diamond mining; Silver mines; Tin mine
Ming dynasty porcelain **46, 47** *Sep*
A Miniature City Down in the Basement. Geographica. *Dec*
MiniRover 15, **17,** 19 *Oct*
Minnesota: ***Wolves in Study Shot, Killed in Minnesota.*** Geographica. *Oct*
Minquartia guianensis 131 *Aug*
Miranda (Uranian moon) 55, 63, **63** *Aug*
Mirnyy station, Antarctica: International Trans-Antarctica Expedition arrival 92-93, **93** *Nov*
Mirogoj Cemetery, Zagreb, Yugoslavia: All Saints' Day celebration **116** *Aug*
Mission to Planet Earth (NASA program) 98 *Oct*
Mississippi River, U. S. 43, 44 *Oct;* Course changes 58 *Oct;* Drought-grounded barges (1988) **84-85** *Oct*
Missouri Botanical Garden, St. Louis, Mo.: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug*
Aerial view **132-133**
Climatron **132,** 135, **136-137, 139**
Director 126, **127,** 128, 135, 136, 138, 140
Founder **132,** 133-134
Herbarium **140;** Growth of collection, annual 126, 129
Japanese garden **134-135**
Research program 129, 138; Flora compilation 138, 140; Plant collecting **124,** 126, **128,** 129, 130-131; Project areas (map) 129
Mitchell, Chuck **72** *Aug*
Mitchell, J. Murray, Jr. 85, 91 *Oct*
Mites: Lava flows **74, 83** *Jul*
Miyako, Japan: Fisheries cooperative **28** *Jul*
Moche culture: ***A Ban on Imports of Sipán's Treasures.*** Geographica. *Nov*
Models: ***A Miniature City Down in the Basement.*** Geographica. *Dec*
Modise, Sedia 53 *Dec*
Moi, Daniel arap: Elephant protection. Earth Almanac. *Jul*
Molasses Reef, Key Largo National Marine Sanctuary, Fla. **116-117, 121-123** *Jul*
Molina, Mario J. 91, 94 *Oct*
Mollusks, land: Hawaii **81,** 86, **86** *Jul*
Mologasele, Julius 53 *Dec*
Molokomme, Athaliah 81 *Dec*
Molokomme, Imelda **95** *Dec*
Moluccas (islands), Indonesia: Spice trade 8, 12, 14 *Sep*
A Monarch Butterfly Population Explosion. Geographica. *Aug*
Mongwa, Georgina **87** *Dec*
Monkeys: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Monks, Serbian Orthodox **122** *Aug*
Monroe County, Fla.: Mosquito control 128, 130 *Jul;* Water treatment facilities 127 *Jul*
Montague, Mrs. Hugh 43 *Nov*

Montenegro (republic), Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
Montezuma Marsh, N. Y. 44, 58 *Nov*
Montezuma National Wildlife Refuge, N. Y.: Great blue heron rookery **60-61** *Nov*
Monticello (Jefferson estate), Charlottesville, Va: Study **112** *Dec*
Montreal Protocol (1987): ***China Warms to U. S. Help on Fridges.*** Earth Almanac. *Nov;* Revision (1990) 95 *Oct*
Monweiła, D. R. 91 *Dec*
Moon and earth: View from space 52, **53** *Aug*
Moore, Hannah: Marriage to Charles Willson Peale 113, 116 *Dec*
Moorehead, Keith 15, 18 *Oct*
mopani trees **56** *Dec*
Moraea neopavonia **128** *Aug*
Moray eels **19, 31** *Oct*
Morik, Helen 85 *Sep*
Morris, Rachel 116 *Dec*
Morris, Robert: Investigation for profiteering 109 *Dec*
Morris, Roger: Painting by **42-43** *Sep*
Morrison, Peter 128-129 *Sep*
Mosakala, Christine **92** *Dec*
Moses, Raymond **23** *Jul*
Mosojane, John and Mandipa **89** *Dec*
Mosquito control: Florida Keys 128, **129,** 130 *Jul*
Moss: Colonization on lava flows **74, 83** *Jul*
Mossi: Slave raids 109, 115 *Oct*
Mother Africa's Children. By Roland L. Freeman. 70, *Aug*
Motswana 96 *Dec*
Mount Baker-Snoqualmie National Forest, Wash.: Logging **124** *Sep*
Mountain gorillas. *Africa Threatened* map supplement. *Dec*
Mouse deer: ***Unusual Mammals Are Bred as Rain Forest Resource.*** Earth Almanac. *Jul*
Moyers Corners, N. Y.: Carnival **58-59** *Nov*
Mpandamatenga, Botswana: Farm project 95-96 *Dec;* Sorghum harvest **84** *Dec*
Muir Woods National Monument, Calif.: Creation 115 *Sep*
Mukluk Well, Beaufort Sea 33 *Aug*
Muktuk 27, 28, **29** *Aug*
Mules, barge **38,** 39, 42 *Nov*
Mumcuoglu, Kosta Y.: ***It's a "Lousy" Job, but Science Has to Do It.*** Geographica. *Aug*
Mummy, Egyptian **117** *Dec*
Murad I, Sultan (Ottoman) 100 *Aug*
Murrelet, marbled **119** *Sep*
Museum of Comparative Zoology, Cambridge, Mass.: Peale collection **106** *Dec*
Mussels, zebra: ***Shipborne Shellfish the Worst of Alien Pests.*** Earth Almanac. *Nov*
Mut temple, Napata (site), Sudan: Childbirth 123-124 *Nov;* Doorway **124** *Nov;* Painted reliefs 111, **122** *Nov;* Procession **125** *Nov;* Sanctuaries 123 *Nov*
Muzo emerald mine, Colombia **46-47,** 51, 52, 54 *Jul;* Murders 47, 52 *Jul;* Wildcat prospector **44** *Jul*
Mycorrhizal fungi **119** *Sep*

N

NCAR *see* National Center for Atmospheric Research
Nacko, Kim **17** *Jul*
Nadir Shah, King (Persia): Sack of Delhi 41, 51 *Jul*
Nagahata, Daishiro 20-21 *Jul*
Nagasaki, Japan: Crucifixion of Christians (1597) **16** *Sep*
Nakamura, Koji 8 *Oct*
Naled: Use in mosquito control 128 *Jul*
Nancé, Eric **136** *Oct*
Nankai Trough, Pacific Ocean 2 *Oct*
Napata (site), Sudan: ***Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov*
Napoleon III, Emperor (France): Invasion of Mexico 132 *Dec*
Narmada River, India: ***India's Giant Water Project Continues.*** Earth Almanac. *Sep*
Narvaez, Alfredo: ***Heyerdahl Still Busy, on Land This Time.*** Geographica. *Sep*
Narwhal hunters **2-3, 16, 18-19** *Aug*
NASA *see* National Aeronautics and Space Administration
Naslund, Nancy 119 *Sep*
Nastasen, King (Kush): Hieroglyphs praising 110 *Nov*
National Aeronautics and Space Administration (NASA): ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep;* ***Neptune: Voyager's Last Picture Show.*** By Rick Gore. 35-47, *Aug;* ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
National Center for Atmospheric Research (NCAR): Climate-modeling center 78 *Oct;* Methane testing **76-77** *Oct;* Sunspot-climate relationship testing 91 *Oct*
National forests, U. S.: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
NATIONAL GEOGRAPHIC:
Map supplement insertion **131** *Nov*
Soviet customs seizures: ***Fans of the Geographic in an Estonian School.*** Geographica. *Sep*
National Geographic Atlas of the World (Sixth Edition): ***New Atlas Explores a Changing World.*** By Gilbert M. Grosvenor. 126-129, *Nov*
National Geographic Kids Network: ***The President's Report on the Education Foundation.*** *Sep*
National Geographic Society (NGS):
Atlas: ***New Atlas Explores a Changing World.*** By Gilbert M. Grosvenor. 126-129, *Nov*
Awards presented: Distinguished Geography Educator Awards. President's Page. *Dec*
Cable TV series (EXPLORER): Rain forest canopy research 138 *Oct*
Cartographic Division: ***Seventy-Five Years of Cartography: A Love Affair With Maps.*** By John B. Garver, Jr. 130-134, *Nov; see also* Atlas, NGS
Education poster. President's Page. *Dec*
Ethnographic project sponsorship 70 *Aug*
Geography education programs *see* National Geographic Society Education Foundation
Grants:
Barkal, Jebel 98 *Nov*
Chimpanzees: ***Jane Goodall at Gombe: a 30th Anniversary.*** Geographica. *Aug*
Cretaceous-Tertiary boundary event: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct*
Golden lion tamarins: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Hagahai tribespeople: ***A New Guinea People Battles for Survival.*** Geographica. *Jul*
Human origins: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Humpback whale genetics: ***Whale Migrations: Mother (Nature) Calls.*** Geographica. *Dec*
Lake Baykal, U.S.S.R.: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Least auklets: ***In Least Auklet Society, Color Matters Most.*** Geographica. *Nov*
lomas: ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul*
Maya: ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Monarch butterflies: ***A Monarch Butterfly Population Explosion.*** Geographica. *Aug*
Peary summer home: ***Restoring the Library of Peary's Island Home.*** Geographica. *Jul*
Western Australia: ***In an Empty Region, a Series of Surprises.*** Geographica. *Aug*
President's Reports: ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep, Dec*
Redwood preservation 115 *Sep*
Summer Geography Institutes. President's Page. *Dec*
National Geographic Society Education Foundation: ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep, Dec*
National Geography Bee: ***Distant Peak Challenges Geography Bee Winner.*** By Gilbert M. Grosvenor. President's Page. *Sep*
National Oceanic and Atmospheric Administration (NOAA): Carbon dioxide measurements 72 *Oct;* Climate modeling center 78 *Oct*
A National Park on Great Blasket. Geographica. *Sep*
National Park Service, U. S.: Ellis Island restoration 100 *Sep*
National parks: Botswana 43, 47, 53, 56 *Dec;* Madagascar 140 *Aug*
National parks, U. S.: ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul;* ***Yosemite: 100 Years Later.*** By Gilbert M. Grosvenor. President's Page. *Oct; see also* Everglades National Park; Redwood National Park

National Register of Big Trees: ***Still Champ After Half a Century.*** Earth Almanac. *Dec*
National Science Foundation: ***Students in Zambia Look for Acid Rain.*** By Gilbert M. Grosvenor. President's Page. *Sep*
Native American Canoe Project: ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul*
Nature Conservancy: ***Prairie Transplant: A Miraculous Move.*** Earth Almanac. *Dec*
Nature reserves *see* Wildlife refuges
Naturist camps: Yugoslavia 112, **112-113** *Aug*
Nautile (submersible) **11,** 13 *Oct*
Nautilus, U.S.S. 15 *Aug*
Nawin, Entu 50 *Sep*
Ncamaseri, Botswana: Water source **45** *Dec*
Ncube, Abdon 64, 65 *Jul*
ndazula **94-95** *Dec*
Nefru-ka-Kashta, Queen (Kush): Amulet **115** *Nov*
Neill, David **124,** 126, 130, 131 *Aug*
nēnē **83,** 85, **85** *Jul*
Nepthys (Egyptian goddess): Tomb painting **114** *Nov*
Neptune:
Neptune: Voyager's Last Picture Show. By Rick Gore. 35-47, *Aug*
Voyage of the Century. By Bradford A. Smith. 48-65, *Aug*
Atmosphere 39
Clouds **34,** 35, **40-41, 51, 60**
Crescent **46,** 52
Discovery 35, 40
Energy radiation 39
Magnetic field: Axis 39, **39**
Moons **36,** 38, 39; Number of 37, 39; *see also* Triton, *outlined*
Rings **36,** 37, **37,** 38, **39,** 40, **59**
Size 35
Spots **34,** 35, 38, **40, 41,** 51, **60,** 61
Temperature 39, 51, 61
Voyager 2 flyby 38, 40; Diagram **39**
Winds 41, 61
Nervo, Amado 143 *Dec*
Ness, Norman F. 39, **54** *Aug*
Net pens: Salmon farming **6-7, 30, 31** *Jul*
The Netherlands: Raids on Spanish trade 21 *Sep*
Nevolin, Yuri Nikolaevich 12 *Jul*
New Atlas Explores a Changing World. By Gilbert M. Grosvenor. 126-129, *Nov*
New Brunswick (province), Canada: Acadians 56, 57, 58 *Oct*
A New Guinea People Battles for Survival. Geographica. *Jul*
New Iberia, La.: Parade assembly **52** *Oct*
New Journeys for Old Tires. Earth Almanac. *Oct*
New Life for Ellis Island. By Alice J. Hall. 89-101, *Sep*
New Mexico *see* Philmont Scout Ranch
New Spain: **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep;* ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
New York: ***Erie Canal: Living Link to Our Past.*** By Joel L. Swerdlow. 38-65, *Nov*
New York, N. Y.: ***Broadway, Street of Dreams.*** By Rick Gore. 57-87, *Sep;* ***Immigration Today: New York's New Immigrants.*** By Alice J. Hall. 103-105, *Sep;* Influence of Erie Canal on growth 44 *Nov;* ***New Life for Ellis Island.*** By Alice J. Hall. 89-101, *Sep; New York City; Manhattan,* Special Places of the World map series supplement. *Sep*
New York State Education and Research Network (NYSERNet) 46 *Nov*
New York State Thruway: Bridge collapse (1987) 49 *Nov;* Volume of traffic (1988) 49 *Nov*
New Zealand: Drift net ban 20 *Jul*
Newhouse, Henry: ***Detecting Lightning's Early Warning Signals.*** Geographica. *Oct*
Newlands, Eve **84** *Sep*
Ngami, Lake, Botswana: Dry spells 46, 63 *Dec*
Nibutani Dam, Saru River, Japan **25** *Jul*
Nichols, Bud and Elsie **52-53** *Nov*
Nicholson, Chris 8, 15 *Oct*
Nielsen, Carl 123, 127, 130 *Jul*
Niemi, Marvin 30 *Jul*
Niit, Ellen 13 *Nov*
Nile crocodiles **41** *Dec*
Nimbus 7 satellite: Ozone hole images **90** *Oct*
Nitrous oxide 72, 75, 79 *Oct;* Atmospheric levels, increase in 79, graph **78** *Oct;* Sources 79, 95 *Oct*
Nixon, Richard M.: Environmental Protection Agency proposal. Earth Almanac. *Jul*
Nkwane, Elias 53, **61** *Dec*
NOAA *see* National Oceanic and Atmospheric Administration
Nohoch Nah Chich: ***Underground Glories of the Yucatán.*** Geographica. *Sep*
Nonburnable Boom Corrals Marine Oil Spills. Earth Almanac. *Sep*
North America: Auroral belt **96** *Oct;* Extant old-growth forest 112 *Sep; see also* Belize; Canada; Mexico; Northwest Passage; United States
North Carolina: Emerald mines 57 *Jul*
North Pole: Submarine transits 14-15 *Aug*
North Tonawanda, N. Y.: Carousel band organ invention 59 *Nov;* Erie Canal terminus 44, 45 *Nov*
Northern lights **97** *Oct;* Cause 88 *Oct;* Satellite images **96** *Oct*
Northern Mariana Islands *see* Saipan
Northern spotted owls: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Northwest Passage: ***Changing Images of the Northwest Passage.*** By John Bockstoce. 2-33, *Aug;* ***Franklin Saga Deaths: A Mystery Solved?*** Geographica. *Sep*
Norway: ***After Nazi Prison a "Full, Unselfish Life."*** Geographica. *Dec*
Nose rings **90** *Aug,* **114** *Oct*
Nova Scotia (province), Canada *see* Acadie
Nubia *see* Kush, Kingdom of
Nuclear power plant: Yugoslavian protest **120-121** *Aug*
Nuestra Señora de Covadonga (galleon): Capture by British warship (1743) **22,** 23, 24, 28 *Sep*
Nuestra Señora de la Concepción (galleon) **8-9** *Sep;* **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep*
Nuns, Franciscan: Yugoslavia **114-115** *Aug*
Nuri (site), Sudan: Tombs 111, 114, 116 *Nov*
NYSERNet (New York State Education and Research Network) 46 *Nov*

O

Obregon, Luis 124-125 *Dec*
Ocean City, Md.: Sea level change, projected 77 *Oct*
Oceanography *see Jason* Project; *and* Marine biology
Oceans: Climate, role in 81, 83 *Oct;* Sea level changes, projected 77, 86, map 87 *Oct;* ***Should We Set Aside Ocean Wilderness?*** Earth Almanac. *Nov*
Ochepukha River, Sakhalin, U.S.S.R.: Salmon 14, 17 *Jul*
Octopus: Eye **32** *Oct;* Pigment cells 33 *Oct*
'ōhelo **83, 85** *Jul*
'ōhi'a-lehua 78, **78, 79, 81, 82, 83** *Jul;* Lava-coated **77** *Jul;* Tree molds **76, 77** *Jul*
Oil industry: Arctic regions 15, 20, 31, 32, 33, access road **12,** rigs 7, **7,** 10, seismic crew **13** *Aug, see also* Alaskan pipeline; Louisiana 51, 64 *Oct*
Oil spills: ***Nonburnable Boom Corrals Marine Oil Spills.*** Earth Almanac. *Sep*
Okavango Delta, Botswana:
Okavango: Africa's Wild Treasure. By William Graves. Editor's Page. *Dec*
Okavango Delta: Old Africa's Last Refuge. By Douglas B. Lee. 38-69, *Dec*
Cattle industry 45, 47, 60-61, **64,** 65
Diamond mines 45, 53, 63
Drought 60-61
Fires **44,** 45
Game reserves 47, 53, 61, 63
Map 47
National parks 43, 47, 53, 56
Poaching 49, 53, 56
Population 43
Safari industry 52, **52-53,** 56-58, **58,** 63
Size 42, 46
Tribal groups **38-39,** 41, 43, **48-49,** 49, **50, 60, 68,** 69
Tsetse flies 60; Eradication efforts **64,** 65
Water cycle, painting **46-47**
Water diversion proposals 63-64
Wild game ranching: Crocodiles 66-67, hatchling **67;** Ostriches **66**
Okavango River, Angola-Botswana-Namibia: Aerial view **8** *Dec;* Fishing 48 *Dec;* Namibian canal proposal 64 *Dec;* Source 42, 46 *Dec;* Woman crossing **38-39** *Dec; see also* Okavango Delta
Okeechobee, Lake, Fla. 90, **93,** 94, 105 *Jul;* Dike, encircling 94, 96 *Jul;* Eutrophication 98-99, 100, attempted reversal 99, 103 *Jul*

Okhotsk, Sea of: Salmon fishing 12, **12-13** *Jul*
Old-growth forests: ***Old-Growth Forests: The Good News and the Bad.*** By William Graves. Editor's Page. *Sep;* ***Old-Growth Forests: Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
"Old Mine" emeralds 55, 64, 65 *Jul*
Oldest Known Maya: Not Quite So Old. Geographica. *Nov*
Oliver, Emmett: ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul*
Oliver, Henry, III: ***Ike's Airplane Returns to the Skies.*** Geographica. *Nov*
Olsenius, Richard, author-photographer: ***Eskimos pull together for a whale harvest.*** 25-29, *Aug;* photographer: ***Changing Images of the Northwest Passage.*** 2-33, *Aug;* On Assignment. *Aug*
Olympic National Forest, Wash.: Old-growth forests 128 *Sep;* Southeastern section logging 120, 121 *Sep*
Olympic National Park, Wash. **108-109** *Sep;* Fragmentation of old-growth forest 128-129 *Sep*
Omega Psi Phi fraternity: Members **90-91** *Aug*
Omega-3 fatty acids: Salmon oil 28 *Jul*
On Assignment:
Azel, José, in Mali. *Oct*
Blair, James P., in old-growth forests. *Sep*
Chiesa, Chris, working on the NGS Atlas. *Nov*
Findley, Rowe, in old-growth forests. *Sep*
Greenberg, Jerry, in the Flo. Keys. *Jul*
Lanting, Frans, in Botswana. *Dec*
McCurry, Steve, in Yugoslavia. *Aug*
Olsenius, Richard, in the Canadian Arctic. *Aug*
Van Sant, Tom, working on the NGS Atlas. *Nov*
Ward, Fred, in the Florida Keys and South America. *Jul*
Onion balls 112, 119, **124-125** *Oct*
Ootoowak, Jayko **2-3** *Aug*
Orange County, Fla.: Sewage water reclamation 98, 108, citrus crop protection **98-99,** rapid infiltration basins **98,** 108 *Jul*
Orchids: Ecuador 131 *Aug;* Hawaii **81,** 86, **86** *Jul*
Ordanoski, Sašo 110 *Aug*
Oregon: Timber industry 124-126 *Sep*
Oribatid **119** *Sep*
Oriente (region), Ecuador 126 *Aug;* Deforestation 130 *Aug*
Orita, Sute **22** *Jul*
Orlando, Fla.: Sewage water reclamation 98, 108, citrus crop protection **98-99,** rapid infiltration basins **98,** 108 *Jul*
Oryx, scimitar-horned. *Africa Threatened* map supplement. *Dec*
Oscard, Fifi 65, 76 *Sep*
Oseczaki, Japan 9, 20 *Oct*
Osprey Populations Soar to Old Heights. Geographica. *Aug*
Ostriches: Botswana **36-37,** chicks **66,** ranching 66 *Dec*
Ottoman Turks: Defeat of Serbs (1389) 100, 104 *Aug*
Our Lady of Guadalupe: Statue **34** *Sep;* Worshipers **141** *Dec*
Our Lady of Porta Vaga: Icon **3,** 10 *Sep*
Ouratea dependens **131** *Aug*
Outdoor Recreation Resources Review Commission (ORRRC). President's Page. *Jul*
Outer Planets Grand Tours (OPGT) 52 *Aug*
Owen, Toby 54 *Aug*
Owls: Northern spotted owls: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep;* Sokoke scops owls. *Africa Threatened* map supplement. *Dec*
Oxendine, Lloyd 69 *Sep*
Oxpeckers **62** *Dec*
Ozone layer: ***Is Our World Warming?*** By Samuel W. Matthews. 66-99, *Oct*

P

Paberže, Lithuania: Church 35 *Nov;* Wood carving **32** *Nov*
Paca, William: Home **103** *Dec;* Portrait **102** *Dec*
Pacific Lumber Company: Logging practices 122 *Sep*
Pacific Northwest (region), U. S.: ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul;* ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Pacific Northwest Indians: ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul;* Salmon ceremony **22, 23** *Jul;* Salmon fishing **2, 25,** 32-33, allocation system 35, 36 *Jul*
Pacific Ocean: ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Pacific plate: Map of Hawaiian Islands' formation 72 *Jul*
Pacific salmon:
Ghost Nets Reap a Harvest of Death. Earth Almanac. *Aug*
Long Journey of the Pacific Salmon. By Jere Van Dyk. 3-37, *Jul*
Aquaculture **6-7,** 27, 28-29, **30, 31**
Commercial fishing 9, 12, 14, 18, 26-27, 29; Country of origin rights 18, 20, 21; Fishermen **8-9, 13,** 24; Japanese fleet 18, 19, 21
Environmental threats 14, 26-27, 30, 32; Dams **24-25, 27,** 33, 36; Efforts to alleviate 30, 35; Irrigation canals **27, 34;** Logging **26, 34-35**
Hatcheries 20, 29, 30, 35; Genetic erosion danger 29-30
Japanese consumption 16, 20, 21, 24, 28 *see also* Salmon cuisine *below*
Life cycle **5,** 13, 18, 24, 26, **26-27, 36;** Spawning runs **4,** 14, **16-17,** 26, **27,** threatened 30, 33, 34, 35, 36
Map of migration routes 18-19
Roe **5,** 12, 20, 24, **26, 28**
Salmon cuisine 12, 16, **17, 28;** Nutritional value 27-28
Species **4,** 12-13, **18-19**
Tracking and counting **32-33,** 35-36
Pacific Sea Resources: **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep*
Pacific sleeper shark **10-11** *Oct*
Packard, Steve: ***Prairie Transplant: A Miraculous Move.*** Earth Almanac. *Dec*
Pähkel, Elga **3** *Nov*
pāhoehoe lava 74, **74, 83** *Jul*
Paita, Peru: Sack of, by English (1741) 25 *Sep*
Pakistan: Emerald mining 54, 55 *Jul*
Paleoanthropology: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Paleontology: ***Mass Extinctions: Not by Meteorite Alone?*** Geographica. *Oct*
Palm Beach County, Fla.: Farm income 96 *Jul;* New home sites **106-107** *Jul*
Palton, Hardy 48 *Nov*
Panhandle region, Botswana 42, 46 *Dec;* Crocodiles 41 *Dec*
Panthers, Florida: Habitat 104 *Jul,* threat to 86 *Oct;* Painting **86** *Oct;* Range map 87 *Oct*
Papua New Guinea: ***A New Guinea People Battles for Survival.*** Geographica. *Jul*
Papyrus **40,** 41, 63 *Dec*
Paquet, Peter 29-30 *Jul*
Parachute sails: Antarctic exploration aid **95** *Nov*
Parian (quarter), Manila, Philippines: Chinese community 16 *Sep;* Rebellion and massacres (1603) 17 *Sep*
Parker, Hank 47, 51 *Sep*
Partido Revolucionario Institucional 132, 133 *Dec*
Pascal, Olivier **133** *Oct*
Passports, counterfeit **103** *Sep*
Patterson, Francine "Penny": ***Koko at Play Outdoors: She Needs Her Space.*** Geographica. *Nov*
Paul, Alicia R. President's Page. *Aug*
Peale, Angelica Kauffmann 100, 104, 109 *Dec*
Peale, Charles Willson: ***The Peales: America's First Family of Art.*** By Otto Friedrich. 98-121, *Dec*
Apprenticeship 104
Art studies 105, 106
Children 100, 104, 110, 111, 112-113, 114, 116-118; Adoptions 110; Infant deaths 100, 104, 105, 112, **113;** Portraits **101, 105, 113**
Collection 101, **106, 108,** 110-111, 113
Essays 113, 116
Friendships 100-101, 106, 110, 112, 113, 116
Inventiveness 104, 106, 109, 110-111, 114; False teeth 116-117; Polygraph **112;** Taxidermy 101-102, **106**
Marriages 104, 106, 112-113, 116
Mastodon excavation 110-111, painting **109;** Skeleton **108**
Museum 101-102, 106, 110, 113-114, 116; Admission ticket **106;** Promotion 109-110, 111, 117
Portraits by 100-101, **102, 105,** 109, **112, 113,** 116, **120;** Portraits of George Washington 100, **118, 119,** mezzotint **118;** Self-portraits **99, 113,** 116
Portraits of **99, 101, 113,** 116
Retirement 113-114

Peale, James: Portrait of George Washington 100, 118 *Dec*
Peale, Margaret: Death 104 *Dec;* Portrait **113** *Dec*
Peale, Raphaelle 114, 117, 120 *Dec;* Birth 104 *Dec,* Portrait **101, 105** *Dec;* Portrait of George Washington 100 *Dec;* Still life **104** *Dec*
Peale, Rembrandt 114 *Dec;* Museum 102 *Dec;* Portrait **101** *Dec;* Portraits by 100, **115, 118** *Dec;* Sketch **118** *Dec*
Peale, Rubens 113-114, 116, *Dec;* Museum 113, 117 *Dec;* Portrait **101** *Dec*
Peale, Titian, I: Death 104, 116 *Dec;* Portrait **105** *Dec*
Peale, Titian, II 116 *Dec;* Flora and fauna collection **115** *Dec;* Portrait **101** *Dec*
"The Peale Family Group" (Peale) 105 *Dec*
Peale Museum, Baltimore, Md. 102, 117 *Dec*
Peale Museum, Philadelphia, Pa. 101-102, 106, 110, 113-114, 116 *Dec;* Admission ticket **106** *Dec;* Promotion 109-110, 111, 117 *Dec*
Pearson, Loren "Butch" **123, 125** *Sep*
Peary, Robert E.: ***Restoring the Library of Peary's Island Home.*** Geographica. *Jul*
Peat bogs: Greenhouse gas source 77, 87 *Oct*
Pegram, Randy 123 *Jul*
Pégué, Mali 112, 115 *Oct*
Peltier, Jason 30 *Jul*
Pemex refinery, Salamanca, Mexico: Pollutant discharge 142 *Dec*
Pendants: Byzantine **53** *Jul;* Shoe pendant, 17th-century gold **48-49,** 50 *Sep*
Pendergast, David: ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Pennsylvania *see* Philadelphia
Pennsylvania Academy of the Fine Arts, Philadelphia, Pa.: Drawing class **110-111** *Dec;* Founding 110 *Dec;* Peale collection **98-99** *Dec*
Pérez, Gómez: Assassination 16 *Sep*
Peridot: Misidentification as emerald 44 *Jul*
Periwinkle, rosy 126 *Aug*
Perlin, Hank 76-77, 80 *Sep*
Permafrost: Global warming effects 87, diagram **87** *Oct*
Perrin, Terry 56 *Oct*
Perry, Matthew Calbraith: Expedition to Japan (1856) 24 *Sep*
Persico, Peter 49 *Nov*
Peru: ***A Ban on Imports of Sipán's Treasures.*** Geographica. *Nov;* ***Heyerdahl Still Busy, on Land This Time.*** Geographica. *Sep*
Pest control *see* Insect control
Pesticides: Florida Keys 128, **129,** 130 *Jul;* ***Osprey Populations Soar to Old Heights.*** Geographica. *Aug*
Peterson, Roger Tory: ***Osprey Populations Soar to Old Heights.*** Geographica. *Aug*
Petitjean, Dave 64 *Oct*
Pettit, Steve 35 *Jul*
Philadelphia, Pa.: ***Philadelphia's African Americans: A Celebration of Life.*** Photos by Roland L. Freeman. 66-91, *Aug; see also* Pennsylvania Academy of the Fine Arts
Philadelphia Doll Museum, Philadelphia, Pa. 87 *Aug*
Philip II, King (Spain): Command to settle the Philippines 8-9 *Sep*
Philippines: Emigrants 103, 104 *Sep;* **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep;* ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Phillips, Waite: ***Philmont Scout Ranch Grows, Goes Coed.*** Geographica. *Jul*
Philmont Scout Ranch, N. Mex.: ***Philmont Scout Ranch Grows, Goes Coed.*** Geographica. *Jul*
Philosophical Hall, Philadelphia, Pa.: Peale Museum 110 *Dec*
Phlebotomus fly 138 *Oct*
Photo supplement: *Portraits of Our Celestial Family. Aug*
A Photographic Gift of a Venezuelan Trek. Geographica. *Sep*
Photography: ***A Photographic Gift of a Venezuelan Trek.*** Geographica. *Sep*
Photography, space: ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep*
Photography, underwater: ***Suruga Bay: In the Shadow of Mount Fuji.*** By David Doubilet and Eugenie Clark. 2-39, *Oct*
Photosynthesis 73, 74, 75 *Oct*
Pieces of eight **32** *Sep*
Pierre Radisson (icebreaker) 23, 31 *Aug*
Pilla, Eileen 86 *Sep*
Pilots Help Preserve Belize Wilderness. Earth Almanac. *Oct*
Pine Ridge Reservation, S. Dak.: ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug*
Pineal window 18, 19 *Oct*
Pineda, Maria 85 *Sep*
Pink salmon 12, **18,** 27 *Jul;* Map showing migration route 18-19 *Jul*
Pioneer 10 (spacecraft): Jupiter flyby 53 *Aug*
Pipefish, ghost **32-33** *Oct*
Pipeline Is Corroded, Alaska Oil Still Flows. Geographica. *Aug*
Piye, King (Kush) 107 *Nov;* Divinity 124 *Nov;* Temple restoration 107 *Nov;* Tribute presented to **104-105** *Nov*
Planet Walker Ends His Long Silence. Earth Almanac. *Aug*
Planets: ***Neptune: Voyager's Last Picture Show.*** By Rick Gore. 35-47, *Aug; The Solar System, Our Sun's Family; Portraits of Our Celestial Family* supplement. *Aug;* ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug; see also* Earth
Plants: ***Hawaii's Volcanic Cradle of Life.*** By William H. Amos. 70-87, *Jul;* ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug;* ***Scourge of the South May Be Heading North.*** Geographica. *Jul;* ***She Crusades to Save the Wildflowers of Spring.*** Earth Almanac. *Jul*
Plasencia, Mario 142 *Dec*
Plate, 17th-century solid-gold 40, 44 *Sep*
Plate tectonics: Hawaiian Islands formation 72 *Jul*
Pliny the Elder: Observations on emeralds 44, 48, 53 *Jul*
Plotch, Batia 65 *Sep*
Plovers: Lesser golden plover **82** *Jul;* Piping plover. Editor's Page. *Jul*
Plumeria blossom **5** *Sep*
Poaching: ***Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov*
Poço das Antas Biological Reserve, Brazil: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Podujevo, Yugoslavia: 1990 rioting **104** *Aug*
Point Hope, Alas. 31-32 *Aug*
Polar bears: Tranquilized for census **20-21** *Aug*
Polar expeditions: ***Six Across Antarctica: Into the Teeth of the Ice.*** By Will Steger. 67-95, *Nov*
Polar Star (icebreaker) **11** *Aug*
Polinsky, Sue: Sunburn **89** *Oct*
Polisi, Joseph 65, 76 *Sep*
Pollution: ***Children Pay for Corrupted Environment.*** Earth Almanac. *Dec;* El Bajío region, Mexico 142 *Dec;* Estonia 10, 18, 21, 22, **29** *Nov;* Latvia 10 *Nov;* Lithuania 22 *Nov; see also* Air pollution; Water pollution
Pollution control: ***California Voters Weigh Big Environmental Plan.*** Earth Almanac. *Sep*
Polygraph (copying device): Peale design **112** *Dec*
Polynya **22-23** *Aug*
Polzine, Jon **34** *Jul*
Pomace fly **78, 82** *Jul*
Ponderous borer **119** *Sep*
Poole, Alan: ***Osprey Populations Soar to Old Heights.*** Geographica. *Aug*
Poor Grade on a Global Test. By William Graves. Editor's Page. *Oct*
Popocatepetl (volcano), Cholula, Mexico **37** *Sep*
Population genetics: ***Whale Migrations: Mother (Nature) Calls.*** Geographica. *Dec*
Porcelain: Chinese 14, 30, jar **47,** sherds **46, 47** *Sep;* Mexican vase **30** *Sep;* Mosaic fountain **31** *Sep*
Poronaysk, Sakhalin, U.S.S.R.: Salmon processing plant 13, **14-15** *Jul*
Portales, Martha 137 *Dec*
Porter, George **9,** 31 *Aug*
Portugal: Colony in India 35 *Sep;* Control of spice trade 8 *Sep*
Potosí, Bolivia: Silver mine 16 *Sep*
Pough, Anthony "Spoons" **72** *Aug*
Powell, George 104 *Jul*
Powys, Gifford. President's Page. *Nov*
Prairie Transplant: A Miraculous Move. Earth Almanac. *Dec*
Prairie Winds Blowing Help to the Sioux. Earth Almanac. *Aug*
Prescription medicines: Plant derivatives 126 *Aug*
Prešeren, France: Statue of 121 *Aug*
President Bush Pushes Education Effort. President's Page. *Dec*
President's Page *see* From the President
The President's Report on the Education Foundation. By Gilbert M. Grosvenor. President's Page. *Sep, Dec*
Press, Frank 98 *Oct*
Press Center, Vilnius, Lithuania: Protest poster **14** *Nov*

Pribilof Islands, Alas.: ***In Least Auklet Society, Color Matters Most.*** Geographica. *Nov*
Price, Larry C., photographer: ***The Baltic Nations.*** 2-37, *Nov*
Primates *see* Golden lion tamarins; Gorillas; Hominids; Lemurs
Prince of Wales Island, Alas.: Logging 129 *Sep*
Priština, Yugoslavia: Military occupation 100, 102 *Aug*
Prommi, Vichai 44, 47, 52 *Sep*
Proud, Stephen. President's Page. *Sep*
Prudhoe Bay, Alas.: Oil reserves 15 *Aug*
Prudhomme, Paul 44, 51, 55 *Oct;* Restaurant kitchen **55** *Oct*
Pseudo-scorpion **119** *Sep*
Puch, Kevin 132 *Jul*
Pučnik, Jože 123 *Aug*
Puget Sound, Wash.: Salmon-fishing rights 36 *Jul*
Pursuit of Human Past Resumes in Ethiopia. Geographica. *Sep*
Pyramids: The Americas: ***Heyerdahl Still Busy, on Land This Time.*** Geographica. *Sep;* Sudan **100-101,** 103, 112 *Nov;* World's largest by volume **36-37** *Sep*

Q

Qayutinnuaq, Nicholas **15** *Aug*
Queen Annes County, Md.: Birthplace of Charles Willson Peale 102 *Dec;* Free school 102 *Dec*
Querétaro (city), Mexico 129, 132 *Dec;* Growth 132, 136 *Dec;* Industry **137** *Dec*
Quiapo Church, Manila, Philippines: Station of the cross **17** *Sep*
Quilter: Philadelphia **84** *Aug*

R

ROVs *see* Remotely operated vehicles
A Rabbit, a Star, an Ancient Supernova. Geographica. *Dec*
"Rachel Weeping" (Peale) 104-105, **113** *Dec*
A Raft Atop the Rain Forest. By Francis Hallé. 129-138, *Oct*
Ragusa, republic of 114-115 *Aug*
Rain forests, temperate: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Rain forests, tropical: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug;* ***A Raft Atop the Rain Forest.*** By Francis Hallé. 129-138, *Oct;* ***Unusual Mammals Are Bred as Rain Forest Resource.*** Earth Almanac. *Jul*
Ram-headed lion, Kushite **117** *Nov*
Ramotshabi, Joe 81 *Dec*
Rams, carved stone: Amun temple ruins, Sudan **96-97** *Nov*
Ramsay, Nathaniel: Remark to Charles Willson Peale 101 *Dec*
Ramsden, Edward **67** *Dec*
Ramses II, Pharaoh (Egypt): Reliefs 111, 122, **123** *Nov*
Rap musicians: Philadelphia **73** *Aug*
Rapid infiltration basins (RIBs): Florida **98,** 108 *Jul*
Rasool, Ichtiaque 98 *Oct*
Rätsep, Krista 14 *Nov*
Rätsep, Tõnis 18, 22 *Nov*
Raven, Katie **127** *Aug*
Raven, Peter 126, **127,** 128, 135, 140 *Aug;* Academic career 136, 138 *Aug;* Coevolution theory 138 *Aug*
Rayas Mine, Guanajuato, Mexico: Modernization 127-128 *Dec*
Recycling: ***Is This an Auto Shop Or a Dentist's Office?*** Earth Almanac. *Nov;* ***New Journeys for Old Tires.*** Earth Almanac. *Oct*
Red-backed voles **111, 117** *Sep*
Red cedar: Felling by loggers **122-123** *Sep*
Red wolves: ***Can El Lobo Make a Comeback?*** Earth Almanac. *Sep*
Redoubt (volcano), Alas.: ***The Blast Not Heard Around the World.*** Earth Almanac. *Dec*
Redwood National Park, Calif.: Creation 115, 122 *Sep;* Grove **130-131** *Sep;* National Geographic Society involvement 115 *Sep*
Redwoods: ***Old-Growth Forests: The Good News and the Bad.*** By William Graves. Editor's Page. *Sep;* ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Reed, Nathaniel Pryor 112 *Jul*
Rees, Bernard **59** *Oct*
Reforestation: ***Earth Army Echoes the Fabled CCC.*** Earth Almanac. *Dec*
Refrigerators: ***China Warms to U. S. Help on Fridges.*** Earth Almanac. *Nov*
Registry Room, Ellis Island, New York, N. Y. **88-89, 99** *Sep;* Restoration **89,** 92 *Sep*
Reino, Katrin **31** *Nov*
Reisner, George A. 103, 105, 112 *Nov*
Religions and religious groups *see* Haitian voodoo; Lutheran Church; Roman Catholic Church; Serbian Orthodox Church; Ukrainian Catholic Church
Remington, Eliphalet 57 *Nov*
Remington Arms Company, Ilion, N. Y.: Custom shop **57** *Nov*
Remotely operated vehicles (ROVs) **3,** 8, 15, **17,** 18, 19 *Oct;* ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug;* ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Restoring the Library of Peary's Island Home. Geographica. *Jul*
Reviving the Vital Role of the Dugout Canoe. Geographica. *Jul*
Reynolds, Forrest 30 *Jul*
Rhinoceroses, black. *Africa Threatened* map supplement. *Dec*
Rhodes, Cecil: Bechuanaland takeover attempt (1895) 82 *Dec*
Ribera de Guadalupe, Mexico: Squatters 139 *Dec*
Rice: Louisiana 44, 57, harvested rice **48-49** *Oct;* Philippines **19** *Sep*
Rich, Frank 75-76 *Sep*
Richardson, Gail: ***Buried "Marshmallows" Save Irrigation Water.*** Earth Almanac. *Aug*
Riddiford, Charles E.: Typeface design 132 *Nov*
Rietmeijer, Frans J. M.: ***Ash from a Volcano: It May Remain Aloft.*** Geographica. *Nov*
Rīga, Latvia: ***The Baltic Nations.*** By Priit J. Vesilind. 2-37, *Nov*
Riggs, Cecil 41-42, 58 *Dec*
Ring Lady (skeleton): ***Theft at Herculaneum: 280 Artifacts Stolen.*** Geographica. *Jul*
Ring systems, planetary *see* Neptune
Rings: Carved emerald ring **55** *Jul;* Egyptian double ring **53** *Jul;* Kushite gold ring **111** *Nov;* Seventeenth-century jeweled rings **49** *Sep*
Río Palenque mahogany 131 *Aug*
riscos 30 *Sep;* Fountain **31** *Sep*
Rittenhouse, David: Collaboration with Charles Willson Peale 106 *Dec*
Rivera, Pedro 139 *Dec*
Rivera Estrada, Angela 139 *Dec*
Robbins, R. Robert: ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec*
Robe, Ainu salmon-skin **20** *Jul*
Roberts, David, author: ***Below the Cliff of Tombs: Mali's Dogon.*** 100-127, *Oct*
Robertson, F. Dale 134, 136 *Sep*
Robertson, Rebecca 73 *Sep*
Robertson, Ruth: ***A Photographic Gift of a Venezuelan Trek.*** Geographica. *Sep*
Robinson, Elmer 72, 75 *Oct*
Robinson map projection 133 *Nov;* Accuracy of Arctic regions 22-23 *Aug*
Rochester, N. Y.: Industries 44, 59 *Nov*
Rock paintings: Tsodilo Hills, Botswana **68,** 69 *Dec*
Rockefeller, Laurance Spelman: ***A Lifelong Commitment to Conservation.*** By Gilbert M. Grosvenor. President's Page. *Jul*
Rockefeller State Park Preserve, N. Y. 86 *Sep*
Rockfish **14** *Oct*
Roditi, Maurice 57, 59 *Jul*
Rodrigue, George **44,** 46 *Oct*
Rodríguez, Rodolfo **126** *Dec*
Rodríguez Cornejo, Margarito 142 *Dec*
Roe: Pacific salmon **5,** 20, 24, **26, 28** *Jul*
Rogers, Bob 113 *Sep*
Roman Catholic Church: Lithuania 9, 12, 32, 35 *Nov;* Yugoslavian nuns **114-115** *Aug*
Roosevelt, Franklin D.: Erie Canal campaign promise (1930) 63 *Nov*
Roosevelt elk **109** *Sep*
Rosing, Norbert: Award-winning photo by. Earth Almanac. *Jul*
Ross, Jack **99** *Jul*
The Round Earth on Flat Paper (Chamberlin) 132 *Nov*
Rounders (game) 51 *Nov*
Rowland, F. Sherwood 91, 94 *Oct*
Rubano, Craig 80 *Sep*
Rueda, Félix 51 *Jul*
Ruffin, Johnny **50,** 52-53, 65 *Nov*
Rugova, Ibrahim 109 *Aug*
Rule, Margaret. President's Page. *Aug*
Rural Industries Innovation Centre, Kanye, Botswana 96 *Dec*
Russian Orthodox Church: ***Ukrainian Catholics: Fighting a New Battle.*** Geographica. *Jul*
Rüütel, Arnold **16** *Nov*
Ryan, Lois 128 *Jul*

S

Saarmaa family **19** *Nov*
Sabe, August 10, **11** *Nov*
Sable antelope 58, 60, **62** *Dec*
Sacha, Bob, photographer: ***Erie Canal: Living Link to Our Past.*** 38-65, *Nov*
Sacramento River, Calif.: Fish facility 30 *Jul;* Salmon habitat 30, 32 *Jul*
Sacrifice, animal: Dogon **116-117** *Oct*
Safaris: Botswana **52-53,** 56-57 *Dec*
Sagami Sea, Japan 2, 8 *Oct*
Sagan, Carl 53 *Aug*
Sagrera, Wayne: Alligator farm 61 *Oct*
Sahel (region), Africa: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct*
St. George's Eve celebration: Tallinn, Estonia 2, **3** *Nov*
St. Louis, Mo.: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug*
St. Pauls Dome-Mount Paxton area, Vancouver Island, British Columbia: Logging damage **114-116,** 132 *Sep*
Saipan (island), Mariana Islands: Wreck of the *Concepción* 39, site **40-41,** 45, **46-47** *Sep*
Sajudis (Lithuanian independence movement) 28, 30 *Nov*
Sakhalin (island), Russian S.F.S.R., U.S.S.R.: Cannery 13, **14-15** *Jul;* Museum **20** *Jul;* Salmon 14, **16-17,** fishing 12, **12-13,** 14 *Jul*
Salamanca, Mexico: Petroleum finery pollution 142 *Dec*
Salinas de Gortari, Carlos: Visit to Irapuato, Mexico **133** *Dec*
Salisbury, Jim 21 *Jul*
Salmon, Pacific: ***Ghost Nets Reap a Harvest of Death.*** Earth Almanac. *Aug;* ***Long Journey of the Pacific Salmon.*** By Jere Van Dyk. 3-37, *Jul*
San Agustín's Church, Manila, Philippines **15** *Sep*
San Angel, Mexico: *risco* fountain **31** *Sep*
San Bernardino Strait, Philippines 12, **24-25,** 32 *Sep*
San Carlos (galleon): Cargo of combs 51 *Sep*
San Francisco, Calif.: Smog **72-73** *Oct*
San Francisco-Oakland Bay Bridge: Rush hour traffic **68-69** *Oct*
San Lucas (galleon): Discovery of Pacific eastbound route 9 *Sep*
San Miguel de Allende, Mexico 136-137, 143 *Dec;* Street scenes **126-127, 138-139** *Dec*
Sánchez, Guadalupe and Antonio **138** *Dec*
Sandawana emerald mine, Zimbabwe 64, 65 *Jul*
Sanfandila, Mexico: Development 136 *Dec*
Sanga, Mali: Market 110, 115 *Oct*
sangleys: Manila, Philippines 16-17 *Sep*
Santa Prisca, Church of, Taxco, Mexico **33** *Sep*
Santa Teresinha, Goiás (state), Brazil: Emerald mine 44, **45,** 55 *Jul;* Gem market 54 *Jul*
Santacilia (ranch), Mexico 124-125 *Dec*
Santísima Trinidad (galleon): Account and inventory of 1752 voyage **23** *Sep;* Capture by English (1762) 21, 23, 24 *Sep*
Santuario de Nuestra Señora de los Remedios, Cholula, Mexico **37** *Sep*
Sapporo, Japan: Salmon ceremony **22** *Jul*
Sarajevo, Bosnia and Hercegovina, Yugoslavia: Art studio **117** *Aug*
Saru River, Japan: Dam 25 *Jul*
Sasek, Thomas: ***Scourge of the South May Be Heading North.*** Geographica. *Jul*
Sastrugi: Antarctica **82-83,** 88, 94 *Nov*
Satellite images: South Florida **90-91** *Jul;* World **127-129** *Nov*
Saturn (planet): ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Sauer, Daniel 54 *Jul*
Sauer, Jules 48, 57, 59 *Jul*
Sava River Valley, Yugoslavia: Moonrise **94-95** *Aug*
Save-the-Redwoods League 115, 122 *Sep*
Savikko, Herman 27 *Jul*
Savoy, Marc **46,** 56, 65 *Oct*
Savoy Music Center, near Eunice, La.: Jam sessions **46,** 56 *Oct*
Savute Marsh, Botswana: Drought 43 *Dec;* Elephants **54-55** *Dec;* Lions **34-35** *Dec;* Water source 47 *Dec;* Zebras **16-17** *Dec*
Savute River, Botswana: Desiccation 43, 47 *Dec*
Saw grass 94, 101, 104-105, **109** *Jul*
Say, Thomas: Portrait **115** *Dec*
Scarification: Fraternity brothers **90-91** *Aug*
Schaller, George B.: ***Wildlife Reserve on the Tibetan Plateau.*** Geographica. *Aug*
Schneider, Stephen H. 80, **80,** 82 *Oct*
Schoharie Creek, N. Y.: Collapse of Thruway bridge (1987) 49 *Nov*
Schools: ***Fans of the Geographic in an Estonian School.*** Geographica. *Sep;* ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep, Dec*
Schrader, William 46, 65 *Nov*
Schwabe, Heinrich 86 *Oct*
Schwenkfelders *see* First Schwenkfelder Church
Scimitar-horned oryx. *Africa Threatened* map supplement. *Dec*
Scitex workstation: NGS Cartographic Division mapmaking **134** *Nov*
Scorpionfish **14** *Oct*
Scott, Robert Falcon 84 *Nov;* Antarctic expedition route 94 *Nov;* Death 81 *Nov*
Scotto, Renata 76 *Sep*
Scourge (warship): ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug*
Scourge of the South May Be Heading North. Geographica. *Jul*
Sculpin: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Sea fan **130** *Jul;* Diseased **131** *Jul*
Sea lamprey: Destruction of Great Lakes fisheries 47 *Nov*
Sea level: Projected changes 77, 86, map 87 *Oct*
Sea urchins: Caribbean-wide die-off (1983) 131 *Jul*
Seadragon, U.S.S.: Arctic expedition 14-15 *Aug*
Seaman, Shane: Crocodile farm 67 *Dec*
SEAROVER **3,** 15 *Oct;* Camera 18 *Oct*
Seattle, Wash.: ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul*
Sekeletu, "Uncle G" 61 *Dec*
Sekwale, Moremi 63, 64 *Dec*
Selby, Harry 56-58, 60 *Dec*
Selinda Spillway, Botswana 42 *Dec*
Sellers, Peter 121 *Dec*
Sellers, Susan 121 *Dec*
Seneca River, N. Y.: Erie Canal route 58 *Nov*
Sequoia National Forest, Calif.: Logging 112-114, **135** *Sep*
Sequoias: ***Still Champ After Half a Century.*** Earth Almanac. *Dec;* ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Serbia (republic), Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
Serbian Orthodox Church: Monks **122** *Aug;* Repression during World War II 123 *Aug*
Serbs, Croats, and Slovenes, Kingdom of 108 *Aug*
Seventy-Five Years of Cartography: A Love Affair With Maps. By John B. Garver, Jr. 130-134, *Nov*
Sewage treatment: Florida Keys 127, 129, 132 *Jul;* ***Harnessing Greenhouses to Purify Sewage.*** Earth Almanac. *Oct;* Water recycling 98, 108 *Jul*
Shadoofs: Jebel Barkal construction 108, **120** *Nov*
Sharks: Lantern sharks **13** *Oct;* Pacific sleeper shark **10-11,** 11 *Oct;* ***Sharks: Predators That Need Our Protection.*** Earth Almanac. *Dec*
Shartzer, Cynthia 103, 105, 107, 108 *Nov*
Shaw, Henry **132,** 133 *Aug;* Botanic garden 133-134 *Aug*
She Crusades to Save the Wildflowers of Spring. Earth Almanac. *Jul*
Sheller, Paul **61,** 63 *Dec*
Shellfish *see* Crabs; Mussels; Shrimp
Ship, graffito: Ellis Island **95** *Sep*
Shipborne Shellfish the Worst of Alien Pests. Earth Almanac. *Nov*
Shipman, Herbert C. 85 *Jul*
Ships: **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep;* ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Shipwrecks: **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep*
Shire, Maurice 48 *Jul*
Shirt collars, removable: Origin 43 *Nov*
Shoe pendant, 17th-century gold **48-49,** 50 *Sep*
Should We Set Aside Ocean Wilderness? Earth Almanac. *Nov*
"shout bands": Philadelphia **80-81** *Aug*
Shrimp, bulldozer 29 *Oct*
Shrimp industry: Louisiana 54, 58, 60 *Oct*

Shuaiba, Kuwait: ***Kuwait: An Economic Oasis Watered by Oil.*** Geographica. *Nov*
Shubin, Valery **20** *Jul*
Shultz, Eugene B., Jr.: ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug*
Shumway, Jeff: ***Is This an Auto Shop Or a Dentist's Office?*** Earth Almanac. *Nov*
Siam: Exports for Manila galleon trade 12 *Sep*
Šiauliai, Lithuania: Crosses **34-35** *Nov;* Pollution 22 *Nov*
Sierra Club: Opposition to old-growth logging 114 *Sep*
Sierra Nevada, Calif.: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Sigi (Dogon ceremony) 109 *Oct*
Silks, Chinese: Manila galleon trade 14, 43 *Sep*
Silver: Coins 16, **32,** 37 *Sep;* Manila galleon trade 8, 18, 30, 36 *Sep,* 125, 127 *Dec*
Silver mines: Mexico 16 *Sep,* 127-129, 136, **137** *Dec*
Silverswords **83, 84,** 85 *Jul*
Sioux Indians: ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug*
Sipán, Peru: ***A Ban on Imports of Sipán's Treasures.*** Geographica. *Nov*
Sir John Franklin (icebreaker) **11** *Aug*
Sitatunga **60** *Dec;* Hoof **60** *Dec*
Six Across Antarctica: Into the Teeth of the I. By Will Steger. 67-95, *Nov*
Skamania County, Wash.: Timber economy 127 *Sep*
Škapars, Jānis 27-28 *Nov*
Skate, U.S.S. 15 *Aug*
Ski equipment factory: Slovenia, Yugoslavia **118** *Aug*
Skiff, Brian A.: ***Celestial Rock Group Has a Place in the Sky.*** Geographica. *Nov*
Skiing: ***Six Across Antarctica: Into the Teeth of the Ice.*** By Will Steger. 67-95, *Nov*
Skin cancers: Increase in number of cases 95, 98 *Oct;* Research 91 *Oct;* Ultraviolet radiation link 88, 95 *Oct*
Skinner, Renate 127-128 *Jul*
Skinner Fish Facility, Byron, Calif. 30 *Jul*
Skyscraper models: ***A Miniature City Down in the Basement.*** Geographica. *Dec*
Slash-and-burn farming: Rain forest destruction 130 *Aug*
Slate, Spencer 126-127 *Jul*
Slave raiders: Bandiagara region, Mali 109, 115, 119 *Oct*
Slaveski, Duha and Stojan **98-99** *Aug*
Sled dogs: ***Six Across Antarctica: Into the Teeth of the Ice.*** By Will Steger. 67-95, *Nov*
Sleepy Hollow Country Club, Westchester County, N. Y.: Members **84** *Sep*
Slogrove, Mike 66-67 *Dec*
Slovenia (republic), Yugoslavia: ***Yugoslavia: A House Much Divided.*** By Kenneth C. Danforth. 92-123, *Aug*
Sluggett, Don 132 *Sep*
Slye, George E.: ***A Miniature City Down in the Basement.*** Geographica. *Dec*
Smith, Bradford A., author: ***The Solar System, Our Sun's Family.*** Supplement. *Aug; **Voyage of the Century.*** 48-65, *Aug*
Smith, Griffin, Jr., author: ***The Cajuns: Still Loving Life.*** 40-65, *Oct*
Smith, James "Bush" **43** *Nov*
Smith, Joseph 59 *Nov*
Smith, Michael L.: ***Osprey Populations Soar to Old Heights.*** Geographica. *Aug*
Smithsonian Institution, Washington, D. C.: ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep;* Office of Folklife Programs 70 *Aug*
Smuggling: ***Emeralds.*** By Fred Ward. 38-69, *Jul;* Manila galleon trade 21, 28, 45 *Sep*
Snake eels **26, 27** *Oct*
Snake River, U. S.: Salmon 30, 33 *Jul*
Snead, Larry: ***Ghost Nets Reap a Harvest of Death.*** Earth Almanac. *Aug*
Snipefish **14** *Oct;* Supposed rarity 15 *Oct*
Snowmobiles: Inuit narwhal hunting **16, 18, 19** *Aug*
Snuffbox, emerald **59** *Jul*
Sockeye salmon **4,** 12, **19,** 27, 30, 33, **36** *Jul;* Migration route map 18-19 *Jul*
Soderblom, Larry 47, 53 *Aug*
Soft coral **15** *Oct*
SoHo, New York, N. Y. 67 *Sep*
Soil, muck: South Florida 94, **104,** loss 94, 98, 104 *Jul*
Soil salinization: ***Buried "Marshmallows" Save Irrigation Water.*** Earth Almanac. *Aug*
Sokoke scops owls. *Africa Threatened* map supplement. *Dec*
Solar constant 86 *Oct*
Solar energy: Car powered by **93** *Oct;* Solar panel fields **70-71,** 81 *Oct; **Solar Sails Will Power Ships to a New World.*** Earth Almanac. *Sep*
Solar flares **96** *Oct;* Communications disruptions 88, 96 *Oct*
Solar Maximum Mission (SMM) satellite: Solar output measurement 86 *Oct*
Solar Sails Will Power Ships to a New World. Earth Almanac. *Sep*
Solar system: ***Celestial Rock Group Has a Place in the Sky.*** Geographica. *Nov;* Condensation temperatures of outer planets, diagram **62** *Aug;* Number of satellites of outer planets 62 *Aug; The Solar System, Our Sun's Family; Portraits of Our Celestial Family* supplement. *Aug;* Viewed from 6 billion kilometers **55** *Aug; see also* Planets; *and* Sun
Solomon, Susan 95 *Oct*
Some Tasty Recipes for a Babylonian Feast. Geographica. *Dec*
Somerlott, Bob 137 *Dec*
Somers, Geoff **75, 78, 79, 84** *Nov*
Sones, David 36 *Jul*
Song and Dance Festival, Tallinn, Estonia **30-31** *Nov*
Songbirds: ***Migratory Songbird Decline 1978-1987.*** Earth Almanac. *Oct*
Songhai: Slave raids 109, 115 *Oct*
Sonnebeyatta, Kemba, and children **87** *Aug*
Sorghum farming: Botswana 94-96, harvest **84** *Dec*
The South (region), U. S.: ***The Cajuns: Still Loving Life.*** By Griffin Smith, Jr. 40-65, *Oct; **Florida's Coral Reefs Are Imperiled.*** By Fred Ward. 115-132, *Jul; **Scourge of the South May Be Heading North.*** Geographica. *Jul; **South Florida Water: Paying the Price.*** By Nicole Duplaix. 89-113, *Jul*
South America: ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul; see also* Argentina; Brazil; Chile; Colombia; Ecuador; French Guiana; Peru; Venezuela
South Carolina: ***Earth Army Echoes the Fabled CCC.*** Earth Almanac. *Dec*
South Dakota: ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug*
South Florida Water Management District (SFWMD): ***South Florida Water: Paying the Price.*** By Nicole Duplaix. 89-113, *Jul*
Board members **97**
Budget 92
Deputy executive director 101, 112
Executive director 90
Lawsuit challenging adherence to water-quality regulations 105
Management area 90, 96; Map 100-101
Water conservation areas 96, 99, 100, 103, 104-105
Water-control projects 96; Canals 90, 94, 96, 100; Dikes 94, 96; Levees 90, 96; Pumping stations **92,** 96
South Pacific Fisheries Forum Agency: ***Ghost Nets Reap a Harvest of Death.*** Earth Almanac. *Aug*
South Pole: ***Six Across Antarctica: Into the Teeth of the Ice.*** By Will Steger. 67-95, *Nov*
Southcott, John C. 132 *Sep*
Southwestern Bell Telephone: ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep*
Space flights and research: ***Epilogue to a Space Odyssey.*** By William Graves. Editor's Page. *Aug; **Neptune: Voyager's Last Picture Show.*** By Rick Gore. 35-47, *Aug; **Solar Sails Will Power Ships to a New World.*** Earth Almanac. *Sep; **Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Space shuttles: ***"Blue Planet": A Distant View of Earth's Problems.*** Earth Almanac. *Sep*
Spain: ***Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Spanish galleons: **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep; **Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Spaulding, Pam, photographer: ***Immigration Today: New York's New Immigrants.*** 103-105, *Sep*
Special Places of the World map series supplement: *New York City; Manhattan. Sep*
Spencer, Kathryn **84** *Sep*
Spice Islands *see* Moluccas
Spice trade: East Indies 8, 12-13, 14, 43, 49 *Sep*

Spiders: Crab spider **82** *Jul;* Folding-door spider **119** *Sep;* Long-jawed spiders **78, 82** *Jul;* Stilt spiders **81, 86** *Jul;* Wolf spider **83** *Jul*
Spiritualist: Philadelphia **90** *Aug*
Split, Croatia, Yugoslavia **96-97** *Aug*
Sponges: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Spoon player: Philadelphia **72** *Aug*
Squid **12, 34-35** *Oct*
Squirrel, flying **118** *Sep*
"The Staircase Group" (Peale) **105** *Dec;* George Washington's reaction 104 *Dec*
Stalin, Joseph: Statue **15, *cover.*** *Nov*
Stancampiano, Joe: Camera design 18 *Oct*
Stanislovas, Father 35 *Nov*
Stansbury, Mary 116 *Dec*
Star coral: Black band disease **130** *Jul*
Star of the Andes (emerald) **62** *Jul*
STAR*FUEL: ***Inventor Makes Fuel to Challenge Gasoline.*** Earth Almanac. *Nov*
Starr, Jacob and Mel 72 *Sep*
Starr, Tama 72, 73 *Sep*
State House, Philadelphia, Pa. *see* Independence Hall
Statue of Liberty-Ellis Island Foundation: Fund-raising campaign 100 *Sep*
Steckline, Greg and Larry **84** *Oct*
Steele, George P. 14 *Aug*
Steelhead salmon 12-13, **19** *Jul,* **118** *Sep*
Steelworks: Latvia **26-27** *Nov;* Yugoslavia **118-119** *Aug*
Stefan Dušan, King (Serbia) 104, 105 *Aug*
Steger, Will: Editor's Page. *Nov;* author: ***Six Across Antarctica: Into the Teeth of the Ice.*** 67-95, *Nov*
Stephens, Scott, and son **51** *Nov*
Steponoski, Dinko **108** *Aug*
Stern, Hans 55, 57, 59 *Jul*
Stewartia, Virginia: ***Still Champ After Half a Century.*** Earth Almanac. *Dec*
Stewartt, Michael: ***Pilots Help Preserve Belize Wilderness.*** Earth Almanac. *Oct*
Still Champ After Half a Century. Earth Almanac. *Dec*
Stilt dancers, Dogon **120, 122-123** *Oct*
Stitilis, Gintaras 34 *Nov*
Stockton, Charles 91 *Oct*
Stone, Edward C. 42, **54,** 55 *Aug*
Stone Age: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
Stoneware jars: Seventeenth-century salvage **45,** 51 *Sep*
Storks, wood 103, 104, **111** *Jul*
Storm warnings: ***Detecting Lightning's Early Warning Signals.*** Geographica. *Oct*
Strahl, Stuart: ***Whatzat? An Odd Bird With a Cow's Stomach.*** Geographica. *Jul*
Strahm, Walter: Death at Ellis Island 96 *Sep*
Strain, Boyd: ***Scourge of the South May Be Heading North.*** Geographica. *Jul*
Stuart, George: ***An Eyewitness View of a Maya Ruler.*** Geographica. *Oct*
Stuart, Gilbert 118 *Dec*
Student exchange programs: ***U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul*
Students in Zambia Look for Acid Rain. President's Page. *Sep*
Studs, 17th-century jeweled **49** *Sep*
Submersibles: Arctic explorations 14-15 *Aug; Nautile* **11,** 12, 13 *Oct*
Sudan: ***Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov*
Suess, Hans E.: Discovery of carbon-14 production irregularities 91 *Oct*
Sugar, James, A., photographer: ***Is Our World Warming?*** 66-99, *Oct*
Sugar maple: Leaf **87** *Oct;* Range map 87 *Oct*
Sugar refinery: Belle Glade, Fla. **102-103** *Jul*
Sugarcane fields: Florida 96, 99, 100, conversion to filtration marshes 105 *Jul*
Sugarcane harvest blessing: Louisiana **58** *Oct*
Summer Geography Institutes, NGS. President's Page. *Dec*
Sun: Effects on atmosphere 86 *Oct;* Energy radiation 85-86 *Oct;* Green flash **98-99** *Oct;* Heliopause 56 *Aug;* Viewed from 6 billion kilometers **55** *Aug*
Sunburn 95 *Oct;* Emergency room patient **89** *Oct*
"Sunset in the Yosemite Valley" (Bierstadt). President's Page. *Oct*
Sunspots: Cycle 81, 86 *Oct;* Historical record 86, 88 *Oct;* Weather link 81, 88, 91 *Oct*
Suomela, Jim 36 *Jul*
Supernovae: ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec*
Surmach, Myron 91, 95 *Sep*
Surtsey (island), Iceland: ***Witnessing Creation on the "Newest Island."*** Geographica. *Oct*
Suruga Bay, Japan: ***Suruga Bay: In the Shadow of Mount Fuji.*** By David Doubilet and Eugenie Clark. 2-39, *Oct*
Depth 2
Dimensions 2
Exploration: Deepest dive 13; Teams 8-9
Fishing: Fishermen's associations 9; "lookbox" fishermen **37;** Overfishing 16, 36
Maps: Location map 8; Panorama 5-7
Port, largest 7
Volcanic sand bottom 27, 29, 30
Sushi, salmon **28** *Jul*
Suzuki, Kiyoshi 12 *Oct*
Swerdlow, Joel L., author: ***Erie Canal: Living Link to Our Past.*** 38-65, *Nov*
Switzerland: Emerald dealers 43, 60 *Jul*
Symbolanthus pulcherrimus **129** *Aug*
Symphonia nectarifera **128** *Aug*
Synfuels: ***Inventor Makes Fuel to Challenge Gasoline.*** Earth Almanac. *Nov*
Synthetic gems 48, **62-63** *Jul*

T

Tagalog 17 *Sep*
Taharqa, King (Kush) 107 *Nov;* Gold ring **111** *Nov;* Hieroglyphs praising 110, 120, **120** *Nov;* Statue **110** *Nov;* Temple built by 123 *Nov;* Tomb 111, ushabtis **118-119** *Nov*
Tallinn, Estonia 11 *Nov;* Festival **30-31** *Nov;* Population 12 *Nov;* Russian protest groups 21 *Nov;* St. George's Eve celebration 2, **3** *Nov*
Tamarins, golden lion: ***Fire Spares Freed Golden Lion Tamarins.*** Geographica. *Oct*
Tangerine trees, ice-covered **98-99** *Jul*
Tanwetamani, King (Kush): Depiction **112** *Nov;* Tomb **112-114** *Nov*
Tanzania: Emerald mining 54, 55 *Jul;* ***Jane Goodall at Gombe: a 30th Anniversary.*** Geographica. *Aug*
Tareke, Teddy. President's Page. *Sep*
Tarrytown, Westchester County, N. Y. 86-87 *Sep*
Taurus Mountains, Turkey: ***Is This the Source of Bronze Age Tin?*** Geographica. *Oct*
Tavčar, Rudi 121 *Aug*
Taxco, Mexico **32-33** *Sep*
Tayasal (Maya capital): ***An Eyewitness View of a Maya Ruler.*** Geographica. *Oct*
Taylor, Elizabeth: Emerald parure **65** *Jul;* On Assignment. *Jul*
Teachers Take to the Field, the Factory, and the Arctic. President's Page. *Dec*
Tecminas (mining company) 54 *Jul*
TEDS *see* Turtle excluder devices
Téli, Mali 109 *Oct; bago di* ritual **116-117** *Oct*
Tellem: ***Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct*
Temperate rain forests: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Temple, Rolland 125, 127 *Sep*
Tengar (ship) **41,** 47 *Sep*
Termite mounds: Botswana **10-11, 35** *Dec*
Terra-cotta tile ceiling: Ellis Island **99** *Sep*
Terrebonne Parish, La.: Erosion 58 *Oct*
Terrile, Rich 35, 47 *Aug*
Tett, Crystal **71** *Aug*
Thailand *see* Siam
Theater: ***Broadway, Street of Dreams.*** By Rick Gore. 57-87, *Sep*
Theft at Herculaneum: 280 Artifacts Stolen. Geographica. *Jul*
Thomson, Sir John Arthur 73 *Jul*
Thunderstorms: ***Lightning's Early Warning Signals.*** Geographica. *Oct*
Tibet: ***Wildlife Reserve on the Tibetan Plateau.*** Geographica. *Aug*
Tilghman, William 116 *Dec*
Timbalier Bay, La.: Wetlands **42-43** *Oct*
Timber *see* Lumber industry
The Timeless Mystique of Emeralds. By Fred Ward. 38-69, *Jul*
Times Square, New York, N. Y. **60-61, 66-67** *Sep;* Portrait artist **77** *Sep;* Revitalization 72-73 *Sep*
Tin mine, Bronze Age: ***Is This the Source of Bronze Age Tin?*** Geographica. *Oct*
Tipu, Belize: ***When the Maya Met Spanish Colonists.*** Geographica. *Sep*
Tires: ***New Journeys for Old Tires.*** Earth Almanac. *Oct*
Titan (Saturnian moon): Atmosphere 52 *Aug*

Titherington, G. 107 *Nov*
Tito (Josip Broz): Death 104, 108 *Aug;* Dilution of Serbian hegemony 105, 117 *Aug;* Nonalignment policy 103 *Aug;* Portrait **119** *Aug;* Resistance movement leadership (1944) 116 *Aug*
Tlale, Mavis 95 *Dec*
Toba, Japan: Aquarium 8, 19 *Oct*
Todd, John: ***Harnessing Greenhouses to Purify Sewage.*** Earth Almanac. *Oct*
Tokyo, Japan: Fish market 16, 20 *Jul*
Tokugawa Ieyasu, Shogun (Japan): Relations with Spain 24 *Sep*
Toloy 106 *Oct*
Tombs: ***A Ban on Imports of Sipán's Treasures.*** Geographica. *Nov; **Below the Cliff of Tombs: Mali's Dogon.*** By David Roberts. 100-127, *Oct; **Kingdom of Kush.*** By Timothy Kendall. 96-125, *Nov*
Tongass National Forest, Alas.: Logging 129, 132 *Sep;* Raft of timber **126** *Sep*
Tongass Timber Reform Act (1989) 129 *Sep*
Toomey, Patrick 23, 31 *Aug*
Topkapı Palace Museum, Istanbul, Turkey: Emerald artifacts **58-59** *Jul*
Torres, Gustavo, and family 137 *Dec*
Torres Rivera, Emiliano 127 *Dec*
Tortoises, geometric. *Africa Threatened* map supplement. *Dec*
Toth, Lou 106, 108 *Jul*
Trachoma: Ellis Island inspection 92 *Sep*
Track of the Manila Galleons. By Eugene Lyon. 5-37, *Sep*
Trade: ***Nuestra Señora de la Concepción.*** By William M. Mathers. 39-53, *Sep; **Track of the Manila Galleons.*** By Eugene Lyon. 5-37, *Sep*
Trans-Alaska pipeline: ***Pipeline Is Corroded, Alaska Oil Still Flows.*** Geographica. *Aug*
Trapiche emeralds **62, 66** *Jul*
Treasure, sunken **5** *Sep;* **Nuestra Señora de la Concepción.** By William M. Mathers. 39-53, *Sep*
Tree ferns: Hawaii **79, 81-82** *Jul*
Tree rings: Climate record 88 *Oct*
Tree snails **81, 86** *Jul*
Triana, Neidel 52 *Jul*
Triggs, Margaret: Marriage to Charles Willson Peale 102 *Dec*
Trinity Church, New York, N. Y.: Reflection **63** *Sep*
Tripod lizard fish **22** *Oct*
Tripp, Jean-Louis **133** *Oct*
Triton (Neptunian moon):
Neptune: Voyager's Last Picture Show. By Rick Gore. 35-47, *Aug*
Voyage of the Century. By Bradford A. Smith. 48-65, *Aug*
Atmosphere 39, 40, 45
Capture theory 43, 47
Composition 37, 43, 63, 65
Crescent **46,** 52
Cryovolcanism **44,** 45, **45,** 47, **64**
Orbit 39, 42, 43, 47
Polar caps 42-43, 45, 47
Seasons 42-43, 47
Size 37, 39
Temperature 37, 40, 42
Terrain **42-43, 44,** 45, **45,** 47, **64**
Tritt, Gary 138 *Dec*
Trompe l'oeil: Murals **15** *Sep;* Painting **105** *Dec*
Tropical Forest Loss. Earth Almanac. *Jul*
Tropical rain forests: ***The Plant Hunters: A Portrait of the Missouri Botanical Garden.*** By Boyd Gibbons. 124-140, *Aug; **A Raft Atop the Rain Forest.*** By Francis Hallé. 129-138, *Oct; **Unusual Mammals Are Bred as Rain Forest Resource.*** Earth Almanac. *Jul*
Troy, Charlie 104 *Sep*
Troy, N. Y.: Industrial heyday 43, 45 *Nov*
Truffles **117** *Sep*
Truman, Harry S.: Dedication of Everglades National Park 103 *Jul*
Tsang, Jimmy, and family **105** *Sep*
Tsetse flies: Okavango Delta, Botswana 60, eradication efforts **64,** 65 *Dec*
Tsodilo Hills, Botswana: Bushmen **50, 68** *Dec;* Rock paintings **68,** 69 *Dec*
Tswana tribes: Botswana 43, 49, 78, 82, 85 *Dec*
Tube anemones **18, 28-29** *Oct*
Tuck, Adrian 95 *Oct*
Tucume (site), Peru: ***Heyerdahl Still Busy, on Land This Time.*** Geographica. *Sep*
Tudjman, Franjo 116 *Aug*
Tulalip Indians: Salmon ceremony **22, 23** *Jul*
Tumor, excised **88** *Oct*
Tundra: Global warming effects 87, diagram **87** *Oct*
Turacos, Bannerman's. *Africa Threatened* map supplement. *Dec*
Turkey: ***Is This the Source of Bronze Age Tin?*** Geographica. *Oct*
Turner, Frederick Jackson 121 *Sep*
Turtle excluder devices (TEDS) 60 *Oct*
Turtle grass: Florida Bay **108** *Jul*
Turtles: Geometric tortoises. *Africa Threatened* map supplement. *Dec*
Tutankhamun, Pharaoh (Egypt): Discovery of tomb 105 *Nov;* Kushite portrayals 98 *Nov*
Tuttle, Russell H.: ***Footprints on the Trail of the Earliest Humans.*** Geographica. *Oct*
Twain, Mark: Comment on research 82 *Oct*
Tyler, G. Leonard **54** *Aug*

U

UAP (research vessel) 85 *Nov*
UV *see* Ultraviolet radiation
Udo, Atsushi 16, 20 *Jul*
Ukrainian Catholic Church: ***Ukrainian Catholics: Fighting a New Battle.*** Geographica. *Jul*
Ulmanis, Kārlis 26 *Nov*
Ultraviolet radiation (UV): Health problems 88, 95 *Oct;* Ozone layer 90, 91, 95, diagram **90** *Oct*
Ulu Burun (cape), Turkey: ***Is This the Source of Bronze Age Tin?*** Geographica. *Oct*
Under the Sun—Is Our World Warming? By Samuel W. Matthews. 66-99, *Oct*
Underground Glories of the Yucatán. Geographica. *Sep*
Underground Railroad: Erie Canal depots 48, runaway slaves 56 *Nov*
Underwater exploration: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec; **Suruga Bay: In the Shadow of Mount Fuji.*** By David Doubilet and Eugenie Clark. 2-39, *Oct; see also* Caves, underwater
Ungulates: ***Unusual Mammals Are Bred as Rain Forest Resource.*** Earth Almanac. *Jul*
Uniates *see* Ukrainian Catholic Church
Union of Soviet Socialist Republics: Ancient Siberian tribes 14 *Jul; **The Baltic Nations.*** By Priit J. Vesilind. 2-37, *Nov;* Emerald mining 54, 55 *Jul;* Jewish refugees **102** *Sep; **Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec;* Pacific salmon catch (1987), chart **18** *Jul;* Secession requirements 24 *Nov; **Ukrainian Catholics: Fighting a New Battle.*** Geographica. *Jul; **U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul;* Voyager mission cooperation 38, **38** *Aug*
United House of Prayer for All People, Philadelphia, Pa.: Baptism **80-81** *Aug*
United Kingdom *see* Great Britain
United Nations: Drift net resolution: ***Ghost Nets Reap a Harvest of Death.*** Earth Almanac. *Aug*
United States: Auroral belt **96** *Oct;* Chlorofluorocarbon aerosol ban 94 *Oct;* Emerald mining 57 *Jul; **Migratory Songbird Decline 1978-1987.*** Earth Almanac. *Oct;* Pacific salmon catch (1987), chart **19** *Jul; **Poor Grade on a Global Test.*** By William Graves. Editor's Page. *Oct;* Synthetic emerald production 48, 62-63 *Jul; **U. S. and Baltic Students Exchange Work in Parks.*** Earth Almanac. *Jul; see also* History, U. S.; Pacific Northwest; The South
U. S. Agency for International Development: Botswana project 53, 56 *Dec;* Madagascar national park project 140 *Aug*
U. S. Army Corps of Engineers: South Florida water-control projects 94, 96, 100, 105, Kissimmee River channelization 96, 106 *Jul*
U. S. Board on Geographic Names: ***After a Century, the Name's Still the Game.*** Geographica. *Oct*
U. S. Environmental Protection Agency (EPA): Ban on wastewater discharge 108 *Jul;* Ozone layer risk assessment 95 *Oct*
U. S. Fish and Wildlife Service: ***Andean Birds Test Skies for California Condor.*** Earth Almanac. *Oct; **Can El Lobo Make a Comeback?*** Earth Almanac. *Sep*
U. S. Forest Service: ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
U. S. Immigration and Naturalization Service (INS) 103 *Sep;* Law enforcement 104-105 *Sep*
U. S. National Park Service: Ellis Island restoration 100 *Sep*
Unruh, Jack: Paintings by **117-118, 119** *Sep*
Unusual Mammals Are Bred as Rain Forest Resource. Earth Almanac. *Jul*

Uraei: Egyptian kings 98, 122 *Nov;* Kushite kings **98, 110,** 111, 122 *Nov*
Uranus: ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Urban, Nancy 105 *Jul*
Urdaneta, Andrés de 9 *Sep*
Urquhart, Fred: ***A Monarch Butterfly Population Explosion.*** Geographica. *Aug*
Ushabtis: Kushite tombs **118-119** *Nov*
Ushki (site), U.S.S.R. 14 *Jul*
Utica, N. Y.: Little Miss Italia beauty pageant **55** *Nov*
Utica Blue Sox 51 *Nov;* Players **50, 51,** 52-53 *Nov*

V

VEF electronics plant, Rīga, Latvia **27** *Nov*
Valade, Isabelle **133** *Oct*
Valladares, Linda **95** *Jul*
Vancouver Island, British Columbia, Canada: Logging **114-116,** 116, 132-133 *Sep*
van der Grinten map projection 132-133 *Nov*
Van Dyk, Jere, author: ***Long Journey of the Pacific Salmon.*** 3-37, *Jul*
van Loon, Harry 91 *Oct*
Van Noort, Oliver: Attack on the Philippines 21 *Sep*
Van Sant, Tom 126 *Nov;* Global image **127-129** *Nov;* On Assignment. *Nov*
Vases: Mexican vase **30** *Sep;* ***Theft at Herculaneum: 280 Artifacts Stolen.*** Geographica. *Jul*
Velocipede, early American 114 *Dec*
Veneta, Oreg.: Loggers 125, 127 *Sep*
Venezuela: ***A Photographic Gift of a Venezuelan Trek.*** Geographica. *Sep;* ***Whatzat? An Odd Bird With a Cow's Stomach.*** Geographica. *Jul*
Vents, underwater: ***Lake Baykal's Deep Vent: A Freshwater First.*** Geographica. *Dec*
Venus: Viewed from 6 billion kilometers **55** *Aug*
Vera Cruz, Mexico 36 *Sep*
Vērman Gardens Park, Rīga, Latvia: Chess game **20** *Nov*
Vermilion Parish, La.: Cattle roundup **62-63** *Oct*
Vesilind, Priit J., author: ***The Baltic Nations.*** 2-37, *Nov*
Videos: First underwater 3-D videos 19 *Oct*
Vietmeyer, Noel: ***Getting to the Root of the Firewood Problem.*** Earth Almanac. *Aug*
Villalobos, Ruy López de: Voyage to the Philippines 8 *Sep*
Villarroel, Veronica 76 *Sep*
Vilnius, Lithuania: Hunger strikers **8-9** *Nov;* Infant **36** *Nov;* Market **18-19** *Nov;* Maternity hospital 36 *Nov;* Population 12 *Nov;* Protest poster **14** *Nov;* Statue of Joseph Stalin **15,** ***cover.*** *Nov*
Violinists: Jazz violinist **73** *Aug;* Violinist, on giant water-lily pad **134** *Aug*
Virgin Mary: Medjugorje sightings 117, 121 *Aug;* Our Lady of Guadalupe **34** *Sep,* 141 *Dec;* Porta Vaga icon **3,** 10 *Sep*
Virginia: Refusal to accept deported Acadians 50 *Oct*
Virginia Beach, Va.: Memorial Day crowd **88-89** *Oct*
Vis (island), Adriatic Sea 116 *Aug*
Vivero, Rodrigo de 24 *Sep*
Vojvodina Province, Yugoslavia: Selfrule 105 *Aug*
Volcanic islands: ***Witnessing Creation on the "Newest Island."*** Geographica. *Oct*
Volcanoes: ***Ash from a Volcano: It May Remain Aloft.*** Geographica. *Nov;* ***The Blast Not Heard Around the World.*** Earth Almanac. *Dec;* Effects on climate 85 *Oct;* ***Hawaii's Volcanic Cradle of Life.*** By William H. Amos. 70-87, *Jul;* Io 50, 54, 65, **65** *Aug;* Popocatepetl **37** *Sep; see also* Cryovolcanism
Voles, red-backed **111, 117** *Sep*
Voodoo, Haitian: Altar **74-75** *Aug;* Priestess 75, 77, **76** *Aug*
Voss, Eli: ***After Nazi Prison a "Full, Unselfish Life."*** Geographica. *Dec*
Vostok station, Antarctica: Coldest temperature 90 *Nov;* Signpost **85** *Nov*
Voyager spacecraft: ***Epilogue to a Space Odyssey.*** By William Graves. Editor's Page. *Aug;* ***Neptune: Voyager's Last Picture Show.*** By Rick Gore. 35-47, *Aug;* ***Voyage of the Century.*** By Bradford A. Smith. 48-65, *Aug*
Vukmirović, Milijana **93** *Aug*
Vultures *see* Condors

W

W. K. Kellogg Foundation: ***The President's Report on the Education Foundation.*** By Gilbert M. Grosvenor. President's Page. *Sep*
Waikamoi Preserve, Maui, Hawaii: Gunnera **87** *Jul*
Waild, Mike **38-39** *Nov*
Walking: ***Planet Walker Ends His Long Silence.*** Earth Almanac. *Aug*
Walking sticks (canes): Carving shop **85** *Aug*
War of 1812: ***Hands-On High Technology.*** By Gilbert M. Grosvenor. President's Page. *Aug*
Warblers, Kirtland's: Painting **86** *Oct;* Range map 87 *Oct;* Threat to habitat 86 *Oct*
Ward, Fred, author-photographer: ***Emeralds.*** 38-69, *Jul;* ***Florida's Coral Reefs Are Imperiled.*** 115-132, *Jul;* On Assignment. *Jul*
Washboard player: Philadelphia **72** *Aug*
Washington, George: Pheasants received from Lafayette 101-102, **106** *Dec;* Portraits by Charles Willson Peale 100, **118, 119,** mezzotint **118** *Dec;* Reaction to Peale painting 104 *Dec;* Silhouette **118** *Dec*
Washington: ***Reviving the Vital Role of the Dugout Canoe.*** Geographica. *Jul;* ***Will We Save Our Own?*** By Rowe Findley. 106-136, *Sep*
Washington Heights, New York, N. Y. 85-86 *Sep*
Washington University, St. Louis, Mo.: Botany school 134 *Aug*
Water lilies: Botswana **29, 42** *Dec;* Violinist atop water-lily pad **134** *Aug*
Water pollution: Agricultural runoff 93, 98-99, 100, 104, 105 *Jul;* Erie Canal 47 *Nov;* ***Florida's Coral Reefs Are Imperiled.*** By Fred Ward. 115-132, *Jul;* Landfill leakage 94, 109 *Jul;* ***Nonburnable Boom Corrals Marine Oil Spills.*** Earth Almanac. *Sep;* Urban storm-water runoff 107 *Jul*
Water recycling: Reclaimed sewage water 98, 108 *Jul*
Water resources: ***Buried "Marshmallows" Save Irrigation Water.*** Earth Almanac. *Aug;* ***South Florida Water: Paying the Price.*** By Nicole Duplaix. 89-113, *Jul;* ***Water—The Growing Crisis.*** By William Graves. Editor's Page. *Jul*
Watkins, Mike 57 *Jul*
Watson, Robert 95 *Oct*
Watson, Scott 36 *Jul*
Wattled cranes **42** *Dec*
Weather: ***El Niño Brightens a Desert Landscape.*** Geographica. *Jul;* Sunspot link 81, 88, 91 *Oct*
Weather forecasting: ***Detecting Lightning's Early Warning Signals.*** Geographica. *Oct*
Weber, Eileen **84** *Sep*
Weddings: Philippines **15,** child attendant **14,** ***cover.*** *Sep;* Philadelphia 83, bridal party **82-83** *Aug*
Wedgworth, George H. 96 *Jul*
Well contamination: Florida 94, wellfield-protection ordinances 109 *Jul*
Wells, Fred E.: ***In an Empty Region, a Series of Surprises.*** Geographica. *Aug*
Wellwood (freighter) **117** *Jul*
Wenger, Aaron. President's Page. *Sep*
Went, Frits 135 *Aug*
West, Benjamin: Training of Charles Willson Peale in portraiture 106 *Dec*
Western Australia (state), Australia: ***In an Empty Region, a Series of Surprises.*** Geographica. *Aug*
Westmoreland, Russell: ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec*
Wetlands: Louisiana 43, 44, 58 *Oct; see also* Everglades; Okavango Delta
Weyerhaeuser Company: Logged land **124-125** *Sep*
Weyerhaeuser Glacier, Antarctica: Crevasse **70-72** *Nov;* Elevation 80 *Nov*
Whales: ***Whale Migrations: Mother (Nature) Calls.*** Geographica. *Dec*
Whaling: ***Changing Images of the Northwest Passage.*** By John Bockstoce. 2-33, *Aug*
Whatzat? An Odd Bird With a Cow's Stomach. Geographica. *Jul*
When the Maya Met Spanish Colonists. Geographica. *Sep*
White, Canvass 50 *Nov*
White, Mike 126, 128 *Jul*
White, Ralph 11 *Oct*
White, Tim: ***Pursuit of Human Past Resumes in Ethiopia.*** Geographica. *Sep*
White band disease **130** *Jul*
White pocketrot fungi **119** *Sep*
White Sands Missile Range, N. Mex.: ***Can El Lobo Make a Comeback?*** Earth Almanac. *Sep*

Whiteman, Barbara, Sinclair, and family **78-79** *Aug;* Doll collection **86-87** *Aug*
Whiteouts: Antarctica 78, 81, 83 *Nov*
Whittaker, Molly Parrish 121 *Dec*
Whooping cranes: Canadian breeding ground. Earth Almanac. *Jul*
Wiik, Gustav 14 *Aug*
Wilcox, Kelly **34** *Jul*
Wild dogs, African 43, 53 *Dec; Africa Threatened* map supplement. *Dec*
Wild game ranches: Botswana **66,** 66-67 *Dec*
Wildebeests 47, 61, 63 *Dec*
Wilderness Society: National forest recommendations to Congress 134 *Sep;* Survey of old-growth forests 128 *Sep*
Wildernesses: ***Should We Set Aside Ocean Wilderness?*** Earth Almanac. *Nov*
Wildflowers: ***She Crusades to Save the Wildflowers of Spring.*** Earth Almanac. *Jul*
Wildfowl Trust: *nēnē* captive breeding program 85 *Jul*
Wildlife: *Africa Threatened* map supplement. *Dec;* ***A Gathering of Waters and Wildlife.*** By Frans Lanting. 5-37, *Dec;* ***Hawaii's Volcanic Cradle of Life.*** By William H. Amos. 70-87, *Jul;* ***Okavango: Africa's Wild Treasure.*** By William Graves. Editor's Page. *Dec;* ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec;* Plastic balloon ingestion. Earth Almanac. *Jul;* ***Wolves in Study Shot, Killed in Minnesota.*** Geographica. *Oct*
Wildlife introduction: ***Scourge of the South May Be Heading North.*** Geographica. *Jul;* Sea lamprey, Great Lakes 47 *Nov;* ***Shipborne Shellfish the Worst of Alien Pests.*** Earth Almanac. *Nov*
Wildlife management: ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec*
Wildlife refuges: ***Homes for Wildlife in Unexpected Places.*** Earth Almanac. *Jul;* ***Okavango Delta: Old Africa's Last Refuge.*** By Douglas B. Lee. 38-69, *Dec;* ***Pilots Help Preserve Belize Wilderness.*** Earth Almanac. *Oct;* ***Wildlife Reserve on the Tibetan Plateau.*** Geographica. *Aug*
Wildlife reintroduction: ***Can El Lobo Make a Comeback?*** Earth Almanac. *Sep*
Wildlife trade: ***She Crusades to Save the Wildflowers of Spring.*** Earth Almanac. *Jul;* ***Will the Ban on Ivory Trade Save Africa's Elephants?*** By Gilbert M. Grosvenor. President's Page. *Nov*
Wilkins, Bill 129 *Sep*
Will the Ban on Ivory Trade Save Africa's Elephants? By Gilbert M. Grosvenor. President's Page. *Nov*
Will We Save Our Own? By Rowe Findley. 106-136, *Sep*
Willamette National Forest, Oreg.: Logging protest **133** *Sep;* Reforestation 128 *Sep*
Williams, Jason. President's Page. *Aug*
Williams, John 64-65 *Jul*
Williams, "Prince Charles" **77** *Aug*
Williams, Ruth 82, **82** *Dec*
Williams, Sue **95** *Dec*
Willson, Richard 86 *Oct*
Wilmot, June 43, 45, 58 *Dec*
Wilmot, Lloyd 43, 67, 69 *Dec*
Wilson, Justin 64 *Oct*
Wind power: California 81, **92-93** *Oct;* ***Prairie Winds Blowing Help to the Sioux.*** Earth Almanac. *Aug*
Winiker, Ron: ***Underground Glories of the Yucatán.*** Geographica. *Sep*
Wire coral: ***Dreams and nightmares in Suruga's wire coral forest.*** By David Doubilet. 20-39, *Oct*
Wise, Scott 73, 75 *Sep*
Witnessing Creation on the "Newest Island." Geographica. *Oct*
Wodraska, John 90 *Jul*
Wolf, Eric R. 129 *Dec*
Wolves: ***Can El Lobo Make a Comeback?*** Earth Almanac. *Sep;* ***Wolves in Study Shot, Killed in Minnesota.*** Geographica. *Oct*
Wood-carver: Walking sticks **85** *Aug*
Wood storks 103, 104, **111** *Jul*
Woolcott, Chris and Jeanette 96 *Dec*
Woolley, Jim 73, 75 *Sep*
World Heritage sites: Sequoia groves proposal 114 *Sep; see also* Bandiagara escarpment
World Press Photo Contest: First prize for humor. Earth Almanac. *Jul*
World War I: Hospital ward, Ellis Island 96 *Sep;* Immigration 95 *Sep*
World War II: ***After Nazi Prison a "Full, Unselfish Life."*** Geographica. *Dec;* Battle of Leyte Gulf 24 *Sep;* Detention center, Ellis Island 95 *Sep;* Hospital ward 96 *Sep*
Worsham, Lucille 35 *Jul*
Writing box, jeweled gold **58-59** *Jul*

X

Xeriscape 112 *Jul*

Y

YMCA *see* Young Men's Christian Association
Yakima Indians: Salmon fishing **2, 25,** 36 *Jul*
Yamaguchi, Aska. President's Page. *Sep*
Yamaguchi, Kenji 15 *Oct*
Yang Wei-Te: ***A Rabbit, a Star, an Ancient Supernova.*** Geographica. *Dec*
Yano, Kazunari 12 *Oct*
Yellow-faced bees **82,** 85, **85** *Jul*
Yener, K. Aslıhan: ***Is This the Source of Bronze Age Tin?*** Geographica. *Oct*
Yosemite National Park, Calif.: ***Yosemite: 100 Years Later.*** By Gilbert M. Grosvenor. President's Page. *Oct*
Yoshino, Yusuke 33 *Oct*
Youdiou, Mali 102 *Oct; dama* celebration **120-121** *Oct;* Granary roof **118** *Oct*
Young, Robert "Washboard Slim" **72** *Aug*
Young Men's Christian Association (YMCA): Estonia 13 *Nov*
Yucatán Peninsula, Mexico-Belize-Guatemala: ***Underground Glories of the Yucatán.*** Geographica. *Sep*
Yugo automobile factory **119** *Aug*
Yugoslavia: A House Much Divided. By Kenneth C. Danforth. 92-123, *Aug*
Civil unrest 100, 102-103, 106, 109-110, 121, 122-123; Rioting **104**
Economy 103, 110, 121
Ethnic groups 102-103, 104, 106
Facts and figures 104
Flag **104**
History 94-95, 100, 103, 106, 108, 116
Industries **118-119, 120-121**
Maps 104-105
Religions 116, 117, 123
Transportation 112-113

Z

Zabar's delicatessen, New York, N. Y. 76 *Sep*
Zagreb, Croatia, Yugoslavia **110-111,** 116-117 *Aug;* Cathedral **101** *Aug*
Zajicek, Ray and Sheila Falvo 48, 51, **51,** 52, 57, 69 *Jul*
Zambia:
Emeralds. By Fred Ward. 38-69, *Jul*
Cutting factory 59, **60-61**
Export ban 42-43, 59; Impact on foreign cutting industry 60, 61
Importance to economy 60
Marketing 59, 60
Mines 42-43, 59; Miners 59, **60**
Production (1989) 59; Percentage of world production 54, 55
Security measures **42-43**
Smuggling 42, 43, 59, 60
Sorting **42-43**
Students in Zambia Look for Acid Rain. By Gilbert M. Grosvenor. President's Page. *Sep*
Zebra mussels: ***Shipborne Shellfish the Worst of Alien Pests.*** Earth Almanac. *Nov*
Zebras: Botswana **16-17, 58, 59** *Dec;* Cape mountain zebras. *Africa Threatened* map supplement. *Dec*
Zen-Ra, Imani **90** *Aug*
Zias, Joseph: ***It's a "Lousy" Job, but Science Has to Do It.*** Geographica. *Aug*
Zich, Arthur, author: ***Botswana, the Adopted Land.*** 70-97, *Dec*
Ziedonis, Imants 21, 28 *Nov*
Zimbabwe: Emerald mines 54, 55, 64, 65 *Jul*
Zingeris, Emanuelis 10, 35-36 *Nov*
Zion Christian Church: Botswana 81-82, 92, dancers **92-93** *Dec*

INDEXING STAFF

Editor
JOLENE M. BLOZIS

Assistant Editor
ANNE K. McCAIN

Issue Editor
DIANE L. COLEMAN

GEORGE I. BURNESTON, III

BRYAN K. KNEDLER

ELISABETH MACRAE-BOBYNSKYJ

LUCINDA L. SMITH

MICHAEL G. YOUNG

SUSAN G. ZENEL